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Fig. 1 (Right)—Group of objects assembled for X-ray inspection, including an oil painting, several small die castings and the larger 6-inch cast steel tees. (Below)—Operator standing at control table which regulates the power for the X-ray test

X-ray Apparatus Used in Portable Setup

Heavy Cast Steel Pipe Fittings Are Examined for Internal Flaws with Equipment Moved Into Plant

NUMEROUS useful applications of X-ray inspection in the industrial field have been pointed out from time to time, applications which have been carried out with X-ray apparatus in the laboratory. Recently the process has been carried into the plant in the inspection of heavy cast steel pipe fittings for high-pressure service.

To make certain of the soundness of steel castings for a recent 1350-pound pressure steam power plant piping installation, the owners of the station and their engineers determined to have these castings X-ray inspected before putting them into service. Since several of the fittings weighed more than 3 tons each it was decided to carry on the inspection at a place better equipped for handling such heavy objects than was the laboratory. Accordingly, the high-potential power plant was transferred to a suitable location near the steam plant. After completion of the inspection the equipment was returned to the laboratory. This is the first time in the history of X-ray examination that equipment powerful enough to examine

steel 3 inches thick has been used as a transportable unit. The work was carried on under the direction of Herbert R. Isenburger Inc., 505 Fifth avenue, New York, with equipment from the laboratory of Dr. Ancel St. John, Long Island City, N. Y. The setup in the laboratory, shortly before the temporary removal of the equipment, is shown in Fig. 1. Objects on hand for inspection ranged from several old paintings to 6-inch cast-steel tees. Fig. 2 shows the temporary installation at the steam power plant.

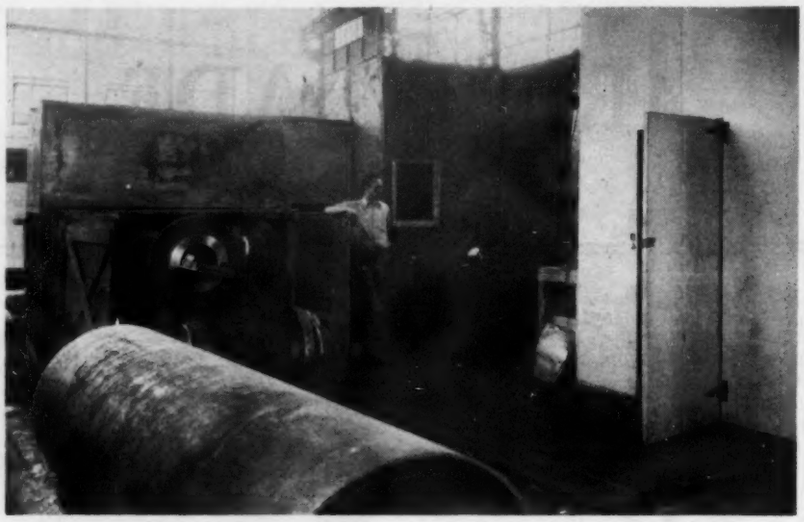

Fig. 2—The temporary installation of X-ray equipment at the steam power plant, the X-ray booth being in the left background

The equipment consists of power generating units, an X-ray tube with its housing and support, a movable platform on which the work to be investigated is mounted, and a dark room. For convenience and safety the power equipment shown in Fig. 7 is located close to the X-ray tube support and is protected by a sheet steel room or enclosure. The power supply includes special transformers which take the ordinary power service in the building, in this case 220-volt, single-phase alternating current, and convert it into 200,000-volt direct current for use on the X-ray tube. The tube itself is supported in a lead-lined box within a sheet steel case directly over the castings under investigation.

An opening in the lower part of the lead-lined box permits the passage of the rays downward through the wall of the casting to make a shadow picture on the film or films held in place within the casting.

The photographic films are placed in special cassettes on a carrier which fits inside of the casting. The design of this carrier must be changed of course to suit the different types of castings. A small flat car running on tracks which extend under the tube, facilitates the handling of the castings. During exposures the casting is surrounded by a lead covered housing which protects the operator and others in the vicinity against X-rays. This housing also travels along tracks under the tube. Electrical protection is provided by grounding all metal parts around the power supply and the X-ray tube. The dark room is similar to any well organized dark room. It is about 8 x 8 feet in size, with shelves for storing materials and an illuminated rack for examining films. Deep solution trays and a washing tank with running water are arranged on one side. The dark room as well as the power room and the exposure housing occupies a corner of the shop not exceeding 20 feet square.

The work of X-ray examination involves two factors, technique of X-ray photography and the study and interpretation of the photographs or exographs, as they have been termed. For an X-ray examination to have its full value, both of these phases of the work must be carried out with painstaking care and the skill which only can come with much experience.

The elaborate details necessitated in the X-ray examination of heavy steel fittings are for the most part beyond the scope of this article. They include such items as double sensitive coatings on films, intensifying screens, the use of absorbing lead solutions to counteract uneven sections of cast-

Fig. 3 (Left)—Pipe manifold mounted for examination of portions indicated by white markers; the lead housing has been rolled back. Fig. 4 (Right)—The same setup but with the housing in position for an exposure

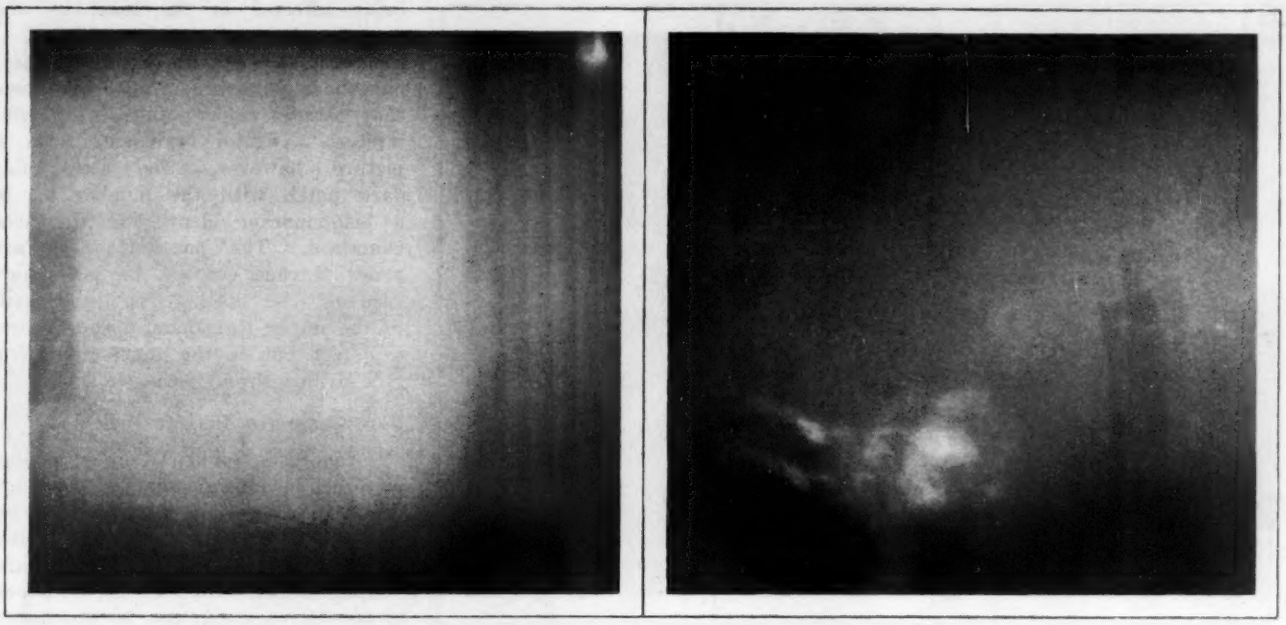

Fig. 5 (Left)—Exograph of sound steel. Parallel bands are screw threads cut in inner surface of steel. Fig. 6 (Right)—Double exposure exograph of a pipe fitting revealing a fairly large sand inclusion. By double exposure the depth of the inclusion beneath the surface is determined

ings, lead shields for protection against reflected rays and the time and direction of exposure.

Some idea of the work may be had from a brief description of the procedure in connection with X-ray examination of a main manifold of the steam piping system, which is about 11 feet long and weighs approximately 7000 pounds. The main part of the casting has an internal diameter of 10 inches and a wall thickness of 2¼ inches. When such a casting is brought up by cranes and placed on the car for X-ray examination, the first step is to mark it thoroughly for identification in the exograph.

Lead Markers on Casting

This is accomplished by means of small lead stencils held in place by strips of adhesive tape. The lead markers are each about 1 x 2 inches in size. They are placed at regular intervals along strips of adhesive tape which are then wound around the casting to form sections throughout its length. On the casting in question the strips of lead markers are placed every 8 inches throughout the length of the manifold. The spacing around the casting is such that there are 12 markers for the full circumference in position like the hours on the face of a clock. All marking is done with the casting in exactly the same position as it was when poured in the foundry. That is, the risers on a cylindrical casting are at the point represented by the hour 12 on the clock, and all other points are figured from this line. The manifold, mounted for examination of the regions indicated by the white stripes, is shown in Fig. 3. In this view the lead housing has been rolled back; in Fig. 4 is the same setup but with the housing in position for an exposure.

The manifold having been marked as previously described, the next thing is to place it in accurate position on the car so that when pushed into place it will come directly under the X-ray tube, with the part to be exographed uppermost. Three pictures are taken at once, that is, three films are placed side by side within the casting so as to come in the exposure zone. A system has been worked out carefully so that by having the position of the car containing the castings at a definite point, it is possible to use graduated measuring sticks to place the films within the casting and have them come directly under the X-ray tube. With the castings in one position, exposures are started at ne end and continue until the other end of the casting has been reached without altering its position. The position of the car and lead housing is altered of course for each exposure.

Fig. 7—Equipment used to supply power for X-ray apparatus

Number of Exographs Required

After each row of exposures is made the casting is revolved about its axis into position for the next row of exographs and the procedure is repeated. The length of time for each exposure varies of course with the thickness of the metal and with other conditions. The 6-inch tees, shown in Fig. 1, required about 5 hours each for complete X-ray inspection; but for the manifold castings in all positions exposures of 10-30 minutes are used, and about 125 exographs are required to cover completely the surface of a manifold casting, thus consuming upward of 30 hours exposure time in addition to 10 hours required for arranging the casting and placing films.

The operating apparatus is simple, consisting of a few small controls

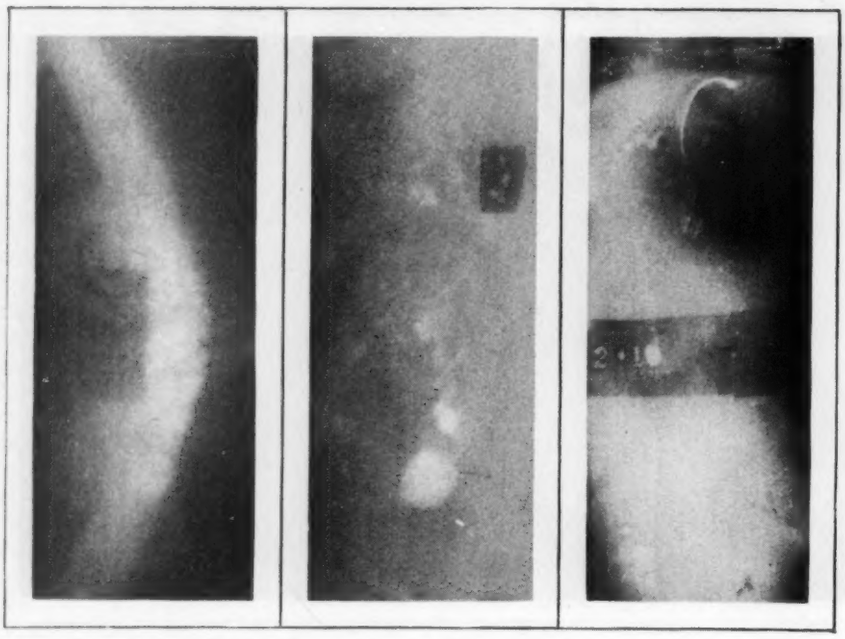

Fig. 8 (Left)—Exograph revealing primary pipe or shrinkage cavities. (Center)—Secondary pipe or shrinkage cracks. (Right)—A clear cut "shepherd's crack" visible at the top of the exograph

outside of the power room. When a casting is ready for an X-ray photograph with the films in place the lead-lined doors are closed and the throwing of a few small switches sets the apparatus in operation. A kilovolt meter mounted close to the control switches indicates the voltage across the tube terminals. This voltage may be checked if desired by a device which measures the length of the spark gap. A spark gap of about 15 inches was indicated during one of the exposures. As soon as the current is on and the tube is in operation, the operator starts a photographer's alarm clock, set to ring at the end of the exposure, and by this means avoids the danger of overexposure. At the end of the exposure time the current is shut off, the door is opened, the film taken out, placed in the dark room for developing, and a new set of films inserted in the X-ray cassettes.

Procedure May Be Varied

The regular procedure as described must be altered of course when the surface between the outlets is being examined. This necessitates a greater distance between the tube and the films and requires a longer time for exposure. Other modifications are necessary when examining the walls of the outlets.

When all the exographs required for the complete investigation of a casting are made and developed they are carefully tabulated and filed for reference. The system of marking is so complete that the indication of a defect in one of the exographs makes it possible to locate accurately that defect within the casting itself.

The method of using a liquid absorber to equalize the exposure rate of an uneven metal section is interesting. The absorber, a lead solution, is carefully prepared so that it will have the same resistance to the passage of the X-rays that the casting has. Then if the casting is small enough it is merely immersed in this solution, and the exograph may be taken in any manner desired without being affected in the least by the variation in casting thickness.

Few X-ray pictures of sound steel have been published, probably because they usually show nothing of special interest. Fig. 5 represents such a picture, however. The rectangular dark patch with the number 3.5 is a lead marker identifying the area examined. The parallel bands are screw threads cut on the inner surface of the steel. The light spot in the upper right-hand corner is not a defect but is the inner end of a hole drilled through the wall.

Causes of Defects Indicated

X-ray tests, confirmed by sectioning or other collateral analyses, indicate that undesirable internal conditions in castings fall into relatively few classes, all traceable to definite and simple causes. Most of these causes, if not all of them, can be eliminated by proper foundry practice. Experience shows that when chronic defects have been corrected by making the indicated changes in casting technique, such as changing gates, riser heads, or air vents, they tend to stay corrected. It is possible thus to eliminate from 75 to 90 per cent of the major defects.

Principal undesirable conditions in castings are:

1. Gas, slag and sand pockets due to loose dirt in the mold.
2. Gas cavities due to imperfectly deoxidized metal.
3. Sand inclusions due to cutting of mold or runners.
4. Pipe or primary shrinkage caused by failure of risers to function as intended.
5. Secondary pipes caused by flow of viscous metal through constricted channels in the casting during the final stages of solidification.
6. Shrinkage cracks starting from a sinus-like cavity developed during cooling.
7. Rupture developed during hydrostatic test.

Accompanying illustrations represent typical X-ray pictures showing a few of these defects. They have been selected chiefly from work performed at the laboratory of Dr. St. John. Fig. 6 is a double exposure of a region containing a fairly large sand inclusion. Between exposures the casting was shifted slightly without changing the position of the film within it. The shadows of the numbered marker were displaced ⅝ inch, of various parts of the inclusion 9/16 inch or more and a small spot below the marker ⅜ inch. This spot was on the inner surface and the marker on the outer. Hence the inclusion lies just under the outer sur-

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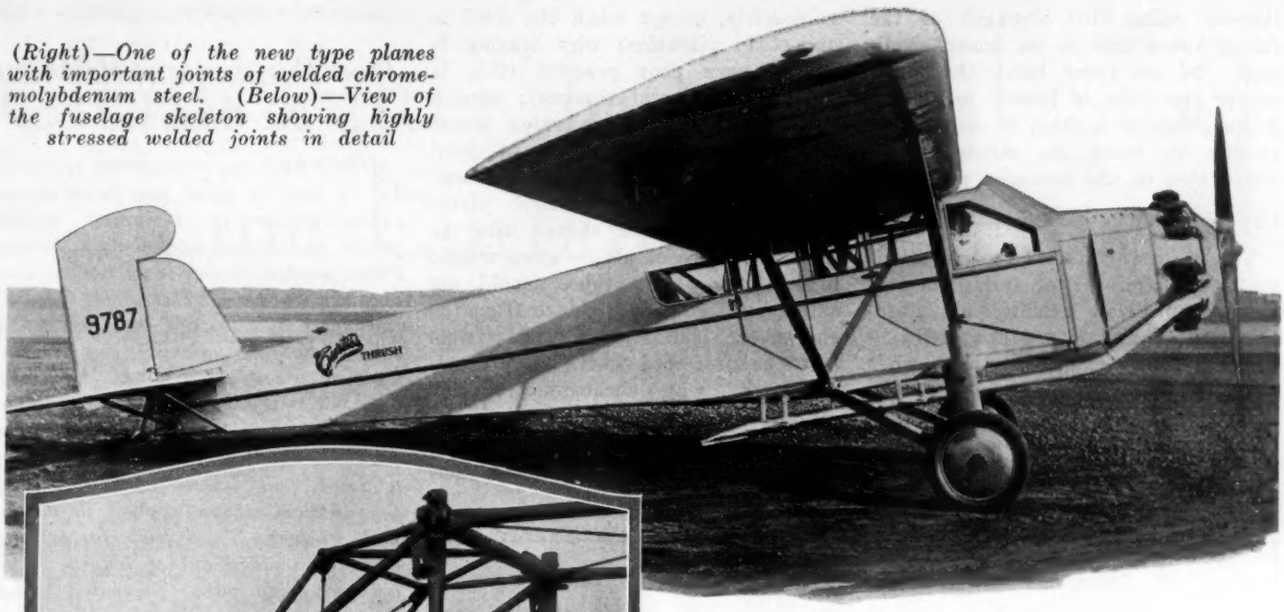
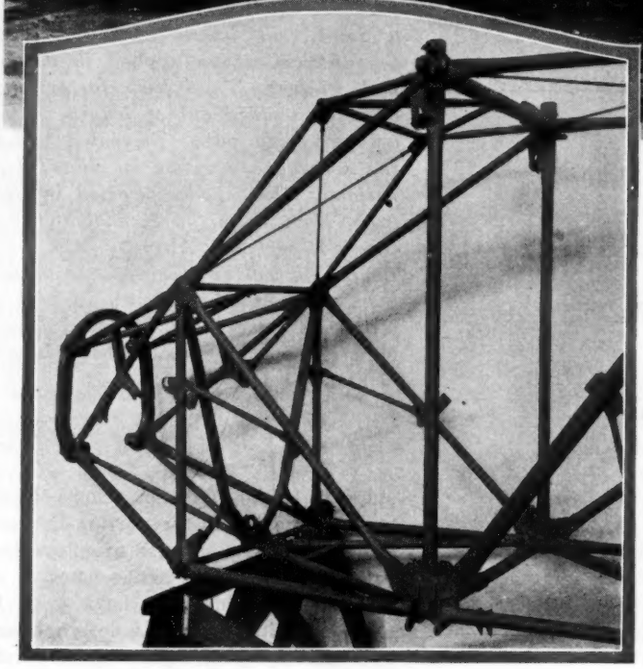
Collaborate on Article

FURTHER progress in the application of X-ray testing to the problems of internal inspection of steel is detailed in the accompanying article, wherein the X-ray apparatus has been transported directly into the plant for the examination of heavy fittings and piping for a high-pressure steam installation. The article has been prepared from material released by Herbert R. Isenburger and Dr. Ancel St. John, and partly from information secured by H. R. Simonds, associate editor of IRON TRADE REVIEW, *after a recent visit to the scene of the testing operations. Mr. Isenburger is president of Herbert R. Isenburger Inc., industrial X-ray specialist, New York, and Dr. St. John is a consulting physicist, New York.*

—THE EDITORS.

(Right)—One of the new type planes with important joints of welded chrome-molybdenum steel. (Below)—View of the fuselage skeleton showing highly stressed welded joints in detail





Careful Design Is Necessary in Airplane Welding

By Kendal Perkins

Curtis Robertson Aircraft Co., St. Louis

SINCE the economic success of an airplane depends so largely on the efficiency of its primary structure from the strength-weight viewpoint, the use of well-designed and well-executed joining is of fundamental importance. The highly stressed joints in most modern airplanes are welded steel, usually the chrome-molybdenum alloy. This method best lends itself to the development and small quantity production methods universal in the aircraft field.

Strength is the first consideration in the application of welding to any stressed structure. Perhaps the greatest weakness of the welding method lies in its apparent dependence on good design and good workmanship. Some factor must be allowed for human variation. With a broadened knowledge of the fundamentals of welding, the factor allowed for this variation can still be appreciably reduced, and the merit of airplanes be added to in consequence. It is with this in mind that two of the fundamentals of airplane fitting design and welding practice are discussed. These fundamental considerations are: First, that chrome-molybdenum steel when welded becomes harder and stronger next to the joint, but softer and weaker a small distance away; and second, that the strength of the weld itself depends upon the care which is taken in keeping the "critical section" outside the joint proper.

Many Factors to be Considered

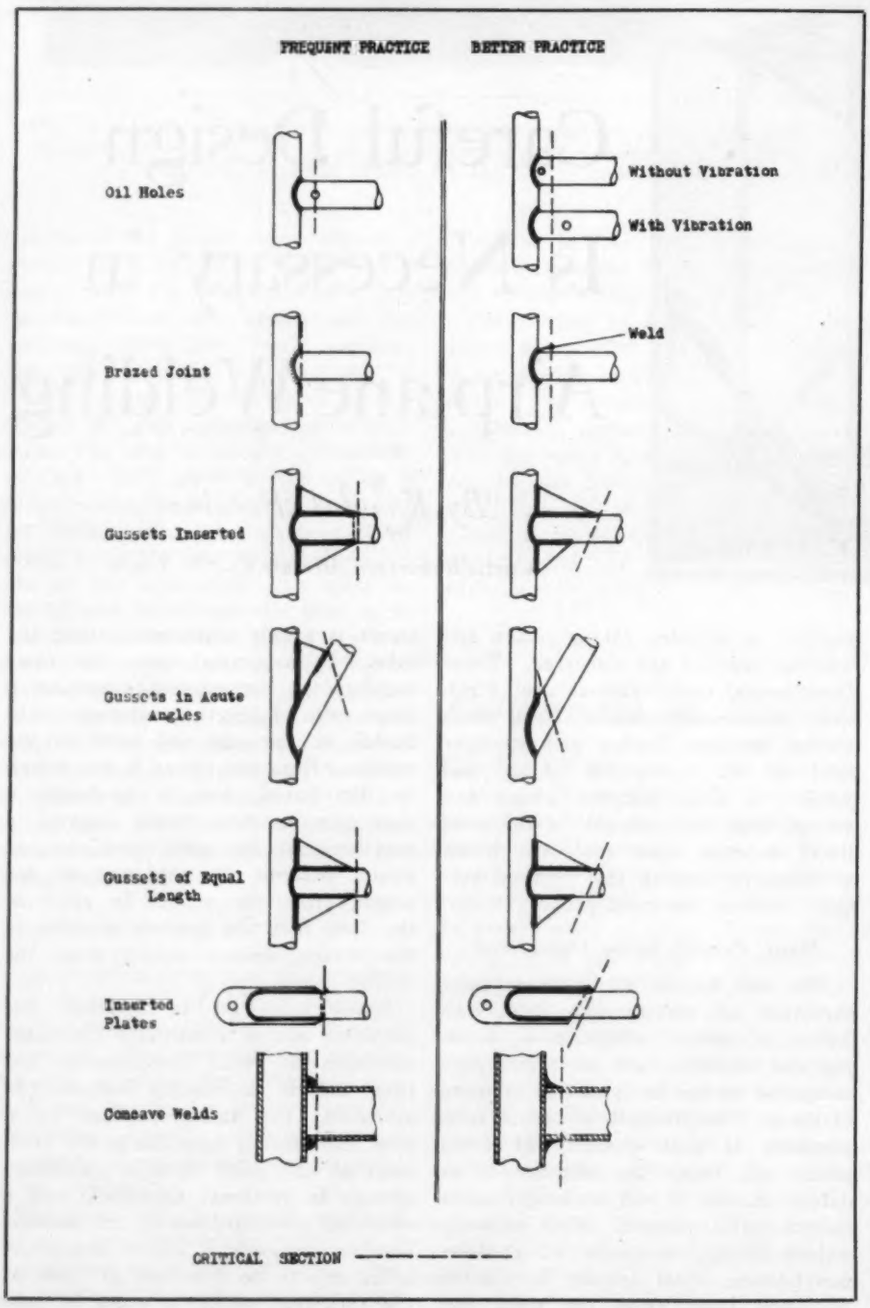
The unit members of the primary structure of an airplane are subjected to tension, compression, bending and vibration, and their sizes are computed on the basis of one or more of these. The strength of one of such members is that quantity of force which will break the member or so deform it that it will no longer serve its structural purpose. With properly welded joints, members of chrome-molybdenum steel tubing in tension fail well away from the weld, but within the region affected by the heating of the joint. In this case the stress is evenly distributed along the tube. In a typical case, the same members in compression, assuming a large ratio of length to diameter, will buckle at the end and bend in the middle. Here the stress is not equally distributed, but is probably a maximum at the center, nearly a maximum at the ends, and zero at points perhaps 20 per cent of the length from the ends. In spite of the fact that the load is greater in the center, failure occurs near the welded joints.

When subjected to bending, the members are in essentially the same condition as with compression and they fail in a similar fashion. In vibration, the failure occurs as a rule, immediately adjacent to the fillet, since at this point there is an abrupt change in sectional thickness, and a resulting concentration of the periodic bending stresses. These characteristics are to be expected in view of the fact that within a space of perhaps an inch from the joint, the metal is heated sufficiently to anneal and

thereby reduce the strength of the tubing below that in its drawn condition. On the other hand, the metal nearer the joint is heated to such a degree that in cooling, it air-hardens enough to bring its strength well above that of the annealed portion.

Understanding of Conditions Necessary

The understanding of the conditions outlined, therefore, for failure in tension, compression, bending and vibration will go far toward proper fitting design. They explain why tubes, when joined end to end, should be telescoped and fish-tailed rather than butted; why holes for oil circulation should be drilled as near the joint as possible, except when the joint is subject to vibration; why brazing is usually very poor practice (this is but one of several reasons); why a gusset is not of much value where a diagonal member enters a joint within 45 degrees of another member; why reinforcing gusset plates need not usually be slotted into the tubes; why gusset plates when welded to two sides of a tube, should not extend up the same distance from the end on each side; why a concave weld is to be preferred where vibration is a factor; why chrome-molybdenum steel is of lesser advantage in units such as engine mounts which are subject to much vibration; why a tube subject to any compression should never be heated in the portion between joints; and why the use of alloy steel welding wire seems unnecessary.



Correct design of welded joints showing method of obtaining the strongest critical section as compared with the frequent practice of welders

Two Fundamentals Must Be Observed

AIRCRAFT engineers must constantly bear in mind two fundamental considerations in designing welded joints in chrome-molybdenum tubing. First, welded chrome-molybdenum steel becomes harder and stronger next to the joint but softer and weaker a small distance away; second, the "critical section" must be kept out of the joint proper, the critical section being understood as that sectional surface through which a joint will break when subjected to sufficient stress applied in a normal manner. These two factors are basic as pointed out at length in the accompanying paper presented before the annual convention of the International Acetylene association in Chicago, Nov. 13-15, by Kendal Perkins, Curtis-Robertson Aircraft Co., St. Louis. As will be observed, the author insists maximum efficiency in highly-stressed members can be obtained only by strict observance of these fundamentals.

In the foregoing we have tried to show that in a properly-designed and well-executed joint, failure under stress occurs not in the weld, but somewhere outside of it. Obviously then, the strength of such a joint depends not on that of the weld itself, but upon the extent to which the members welded are weakened by the process.

Critical Section Defined

If the workmanship of the weld is poor, it is perfectly possible for its strength to fall below that of the annealed member, and thereby bring the strength of the joint below its maximum. If we define the "critical section" of a welded joint as that sectional surface through which a joint will break when subjected to sufficient stress applied in the normal manner, then the strength of the joint and the strength of the critical section are identical. In order to make this strength maximum, it is necessary to see that the critical section does not fall within the joint proper. To insure this, it is only necessary for the welder to adhere to the following three conditions: The chemical state of the base metal and filler rod must

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Chain Filter Installed at Stock Line Curtails Dust Loss

Uniform Distribution of Gas and Reduction in Its Velocity Afford Lower Coke Consumption Per Ton of Iron at German Blast Furnace

By Julius Stoecker

MODERN furnaces with a production of 1000 tons of iron a day are working chiefly along the circumference of the shaft although for best heat economy a furnace should work uniformly over its entire cross section. This is possible only if the burden is entirely uniform as to size, a condition which is ideal but impossible to obtain in regular practice where a certain amount of fine ore is charged with lumpy material. To reduce the working of the furnace along the circumference by increasing the fine ore along this line is wrong since under such conditions the furnace would work more in the center and would be dead along the circumference. Circumferential working of the furnace does not increase the coke requirements since this kind of working takes place only in the upper part of the stack.

With rapid working furnaces the velocity of the gases increases, the top temperature rises, larger amounts of heat are lost and a greater amount of flue dust is made. In addition the gases in the upper part of the burden column ascend in one or two heavy streams in accordance with the method of removing the gas from the furnace. With such rapid working furnaces any irregularity will expel an appreciable portion of the coke burden with substantial amounts of ore and limestone which settle in the dust catcher.

Good results were obtained at Bochum, Germany, with a furnace having a total volume of 18,538 cubic feet with a hearth diameter of 12.8 feet and a bosh height of 16.4 feet. The top temperature of this furnace is around 500 degrees Fahr., and the flue dust is less than 4 per cent of the burden. With another furnace having a hearth diameter of 16.4 feet, a bosh height of only 12.14 feet and a cross sectional area of 636 square inches for the tuyeres, a favorable operation was obtained. The flue dust, however, was twice as high as with the former furnace based on the same amount of coke charge. The resulting top temperature was 140 degrees Fahr. higher. In spite of this the coke was less with the same kind of burden and the same wind temperature, while the daily production was increased from 700 to 900 tons.

Depends on Filling

Claim frequently is made that larger tuyeres and a wider shaft increase the dead center and increase the working along the circumference. This fact could not be verified by the investigations of the writer who found that the circumferential working of the furnace depends entirely on the method with which the furnace is filled. The second furnace previously mentioned has the upper 10.8 feet of the stack made of iron. The first furnace after a comparatively short operation had its lining eaten away, while with the second furnace the lining was kept intact. With the first furnace the cross section of the stack was increased by 66 per cent and the gas velocity reduced by 40 per cent.

Furnaces which are working along their circumference always will produce large amounts of dust provided the cooling plates do not frequently change the direction of the gas stream. Reduction in the gas velocity and frequent changes in the direction of the gas stream, therefore, are favorable for reduction of the flue dust and for a lowering of the top temperature. These conditions undoubtedly were responsible for the satisfactory operation of the first mentioned furnace.

Should it be possible to lower the top temperature and to decrease the flue dust with the second furnace, then the already favorable results of this furnace would become still better. Improved working conditions are possible with a chain filter which has the form of a vertical hollow cylinder with a diameter equal to that of the stock line of the furnace. A strong flat iron ring is attached to the reinforcing ribs of the large hopper. Fastened to the flat iron ring are strands of chain made of ⅜-inch round iron, which reach down to the stock level. In front of the downcomers over a width of 11.15 feet, 76 strands are attached for each running 40 inches, while over the balance of the filter only 43 strands are attached for each running 40 inches. The result is that only a small part of the total gas passes to the downcomer through the denser part of the

Blast Furnacemen Eye Dust Catchers

REDUCTION of flue dust loss has been an important problem confronting blast furnace operators. American engineers have enlarged top diameters and increased the distance between the large bell and stock line, the effect of which has been to lower the amount of flue dust made. German engineers, faced with much higher fuel costs, have been forced to employ every possible means to curb these losses. At Bochum, Germany, for example, it is found that a chain screen device in the top of a furnace is being used with satisfactory results to decrease the flue dust output. This interesting installation is described by Julius Stoecker in the Sept. 5, 1929, issue of Stahl und Eisen from which the accompanying article is abstracted.

filter, while the larger part will go through the wider filter parts.

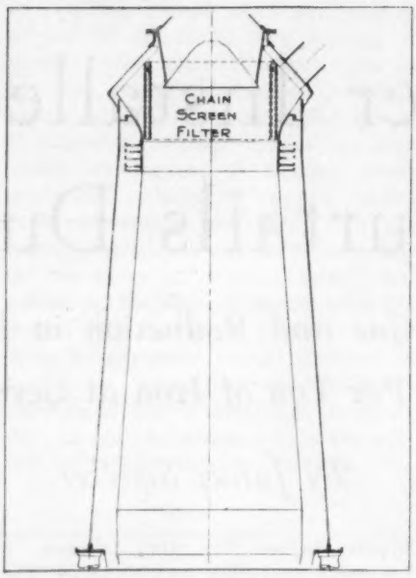
At first a decrease of the dust was not perceptible although the coke was practically eliminated. Gradually, however, the dust decreased and after about three weeks only half of the original amount of dust was made. At the same time the top temperature was lowered about 140 degrees Fahr. and the carbon dioxide content increased by about 10 per cent. The heat requirement of the furnace was lowered with the result that with the same blast temperature of 1112 degrees Fahr., 66 pounds of coke was saved per ton of iron made.

With the chain filter the gas does not leave the furnace in one or two large streams which reach a high velocity in the upper part of the furnace. Instead it is uniformly distributed over the entire cross section of the furnace, which means that its sensible heat at least in the upper parts of the burden is given up more uniformly. This results in a more uniform reduction of the ore. The gas passing through the chain filter experiences a frequent alteration in its direction. Its velocity is reduced which effects a decrease in the dust-carrying capacity.

Dust Dislodges Easily

The chain filter requires no shaking device to dislodge the dust. The conditions prevailing at Bochum are especially bad on account of the zinc and lead content of the burden. To investigate this point the filter was not shaken during the first 14 days. During this time constant pressure measurements were taken on both sides of the filter to safeguard against the possibility that dangerous conditions could occur. The pressure differential increased gradually, showing that the filter became clogged up. At the same time the amount of dust also gradually decreased. After 14 days a manhole was opened and the dust adhering to the filter was analyzed. It consisted of 16.70 per cent iron, 3.15 silicon, 0.65 alumina, 4.51 calcium oxide, 1.63 magnesium oxide, 45.33 zinc and 2.15 per cent lead.

No cleaning of the chain filter was attempted for eight days. When the pressure differential increased to 32 inches water column, the filter was shaken and the original condition immediately was re-established with a pressure differential of not more than 8 inches water column. With the filter shaken clean of its adhering dust, a larger amount of flue dust passed through with the gas, but the total amount of dust was less than half of that made during the time when the furnace operated without



Strands of chain suspended from iron ring attached to reinforcing ribs of hopper serve to keep flue dust losses as low as possible

the filter. A certain pressure differential in front and behind the filter is necessary to obtain satisfactory filtering of the gas. The amount of this differential depends on the individual furnace and its condition of operation.

These results were obtained with a coke consumption of 500 tons in 24 hours, and during a time where the furnace had to be operated slowly. With increased wind pressure the conditions change somewhat, but even the fine coke remained in the furnace. Increased wind pressure raised the dust from 4 to 5 per cent of the burden, but remained 40 per cent below the dust made under the same conditions without filtering. The average yield was 49 per cent of the burden and the coke consumption 1650 pounds dry, per ton of pig iron. An average of 28 per cent of the total produced gas was used for stoves and blowing engines. The daily production was 900 tons of low sulphur basic pig iron.

X-Ray Equipment Is Used in Portable Setup

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face and nowhere penetrates more than one quarter the way through the wall and consequently is permissible.

Fig. 8, left, shows primary pipe or shrinkage cavities extending through the flange from the heavy section at the junction of flange and wall of a small valve body. A gas pocket, a sinus-like cavity and extended secondary pipe or shrinkage cracks appear in the center, Fig. 8, taken from the main wall of a 6-inch tee fitting. In the exograph at the right in Fig. 8, from the wall of a 3-inch ell, the clear cut "shepherd's crack" represents a cold crack starting from a small inclusion and developed by the hydrostatic test, which had been passed successfully.

Careful Design Required in Aircraft Welding

(*Concluded from Page* 78)

be changed as little as possible; the sectional thickness of the fillet must nowhere be less than the thickness of the thinner member multiplied by the ratio of the strength of the base metal after welding to that of the rod after welding; and the filler must be perfectly fused to both base metals for a width equal to that of the fillet itself. Strict attention to the location of the critical section of the joint is therefore of fundamental importance and may be called the second consideration.

A welded joint designed on the basis of the first fundamental consideration and executed on the basis of the second fundamental consideration will be as strong as it is possible to make a joint with chrome-molybdenum steel tubing.

The use of the word "penetration" in welding alloy steels does not seem advisable since it leads to the thought that it is best to melt entirely through the base metal and build up with filler. Obviously, it is wrong to replace any of the high-strength base metal with the relatively low-strength welding rod, and it is suggested, therefore, that the word "penetration" be replaced by the word "fusion."

To Conduct Shop Course

A nonferrous shop operation course for brass foundrymen will be held during the Cleveland convention of the American Foundrymen's association, May 12-16. The course will be similar to those held at several recent conventions for gray iron and steel foundrymen. The subjects which will be discussed include crucible, open-fire and electric-furnace melting practice, gating and the effect of pouring temperatures in pouring practice. The course will be held at 4:00 p.m. each day the convention is in session and each subject will be in the hands of a leader who is an authority on the particular phase of brass foundry practice under discussion.

Large Uses of Steel In Small Ways

159th Article

Foot Guards

Steel guards protect workmen's feet against heavy objects accidentally dropped

A SOLDIER'S "tin hat" suggested a new type of foot guard to a safety inspector and thus led to the manufacture of a product which annually consumes about ten tons of steel and alloy steel. The United States Steel Corp. subsidiaries have been leaders in safety work, as shown by federal government reports, and it was in one of these plants that the guard was first put to practical use.

C. E. Sankey, who has charge of safety and waste elimination for all works of the National Tube Co., was formerly a safety inspector at the company's Ellwood plant. He was impressed and worried by the fact that 34 per cent of all lost-time accidents were due to injuries to the feet of workmen.

Returning Soldiers Give Solution

Mr. Sankey studied the problem a long time until one day when watching "the boys" marching home from the war he coupled the idea of the steel hat with a steel foot guard. If a hat could protect a head from bullets he concluded that it could prevent toes from being smashed when workmen dropped iron and steel on them.

Sankey bought some of the hats and formed a few pairs of guards from them. Naturally he was concerned to determine what shock they would stand, and on testing was surprised to find that these first guards could only be expected to withstand a drop of a 50-pound weight from a height of 1½ feet, or a total of 75 foot-pounds.

Many of the men at work in the plant carried a weight as heavy as 100 pounds and at a height varying from 2½ to 3 feet. So he aimed to obtain a guard that would resist a force of 300 foot-pounds. He made many experiments with various kinds of metal and made many changes in the shape of the guard. Finally by using 16 gage steel, reinforced with corrugations, he secured a protector with the desired strength. Such a guard weighs 16 ounces and will protect the foot against the heaviest weight a man can lift.

A similar type of guard made of a aluminum alloy and possessing the same degree of resistance to shock weighs 6 ounces. Some companies manufacturing them use 18 or 20 gage steel to lessen the weight, but the change in the gage only means the difference of an ounce or two and materially lessens their strength. The guards are made by cold stamping.

Injuries Decrease 91 Per Cent

It is claimed that after tests for over a year in a steel plant employing 3000 men the result was a decrease of 91 per cent in foot injuries. The guards evidently have been an important factor in reducing number of lost-time accidents in Steel corporation plants, as they are in general use. Some of the subsidiary companies are making them for use by their workmen, and they also are available for other industries, having found extensive use in ice plants and lead and zinc mines.

The guard is 8 inches in length at the base, and about 7 inches in length at the upper portion which fits over the arch of the foot. It is about 2

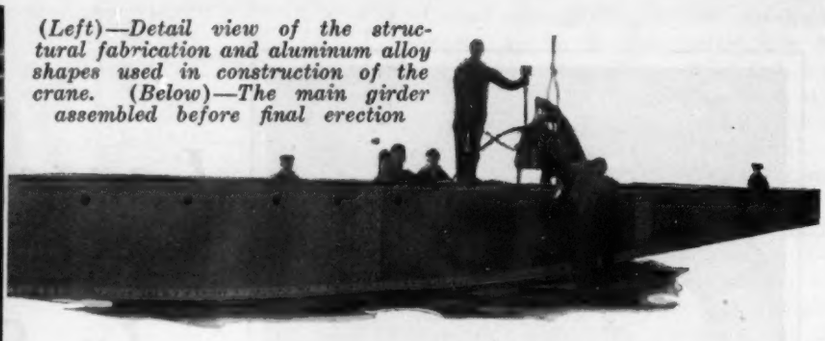
(*Concluded on Page* 94)

THIS is the one hundred fifty-ninth of a series of articles dealing with some of the obscure uses of steel which go far toward absorbing the American tonnage.

Among articles appearing every two weeks and not included in Vol. I containing 51 *separate descriptions are:*

Wire Lamp Shades	*Washing Machines*
Belt Fasteners	*Resilient Road Guards*
Sap Spouts	*Screw Drivers*
Flexible Conductors	*Windows*
Foundry Flasks	*Car and Bus Seats*
Teletype Machines	*Bathroom Cabinets*
Porch Furniture	*Lock Washers*
Telegraph Wire	*Steel Scaffolding*
Waste Receptacles	*Pavement Armor*
Chain Screens	*Torches*
Louvred Ventilators	*Ironing Machines*
Universal Joints	*Ball Bearings*
Rolling Doors and Shutters	
Messenger Call Boxes	*Telephone Booths*

(Left)—Detail view of the structural fabrication and aluminum alloy shapes used in construction of the crane. (Below)—The main girder assembled before final erection



Traveling Crane Is Built of Aluminum

Special Care Used in Riveting Members To Avoid Excessive Temperatures—Machine of 10-Ton Capacity Tested Under 34,500-Pound Load or 72 Per Cent Above Rating—No Fabricating Difficulties Encountered

By F. V. Hartman and E. C. Hartmann

Physical Testing Division, Aluminum Co. of America, Pittsburgh

A NEW application of alloys of aluminum in the field of structural engineering is found in the 10-ton traveling crane recently installed in the works of the United States Aluminum Co., Massena, N. Y. While there are numerous examples of aluminum structures such as motor truck bodies, large shipping and storage containers, railway cars, etc., this is the largest structural application today with the exception of the framework for lighter-than-air craft.

Briefly described, the crane is a 3-motor, single-hook machine with a lift of 22 feet. The bridge is fabricated from two double-web girders spaced 7 feet on centers. The girders are constructed on the aluminum alloys, and have a span of 72 feet 2 inches. Aluminum also was used in the walkway, handrails and operator's cage. The bridge girders frame into cast-steel carriages at their ends, and a one-piece cast-steel trolley carrying the hoisting mechanism is mounted on the girder rails.

Fabrication Follows Usual Lines

The design of the crane was based largely upon the usual practice followed in building steel cranes, although certain departures were necessary in the case of the bridge girders since aluminum and steel differ in some of their mechanical properties. While the strength of structural steel and of the heat-treated aluminum alloys is approximately the same, the modulus of elasticity of aluminum is only about one-third that of steel. Because of this difference in the modulus of elasticity, an aluminum girder, having a cross section identical to that of a steel girder, would deflect about three times as much under load and have less lateral stiffness. Since this is the case, it was necessary to construct the girders of the aluminum alloy crane with sections somewhat deeper, wider, and greater in area. In addition, the girders were given approximately twice as much camber as ordinarily would be used in a similar steel girder.

The crane was built by the Alliance Machine Co., Alliance, O. Although this company had had no previous experience with aluminum alloys, it encountered no fabrication difficulties. The web and cover plates were flattened and sheared on the same equipment ordinarily used in the construction of steel girders. The rivet holes were subpunched and then reamed to size in the usual manner. Hot Steel rivets, ¾-inch diameter, were used throughout. They were driven with air-operated squeeze riveters, except for some of the more inaccessible ones which were driven with pneumatic hammers.

Excessive Rivet Temperatures Avoided

No difficulty was experienced in riveting the girders, although a few special precautions were taken. Excessive rivet temperatures were avoided to decrease the possibility of heating the aluminum plates sufficiently to draw their temper. In addition, the rivets were driven at random during the assembly of the box girders in order not to concentrate the heating effect of the rivets and in order to help in keeping the girder straight during the riveting.

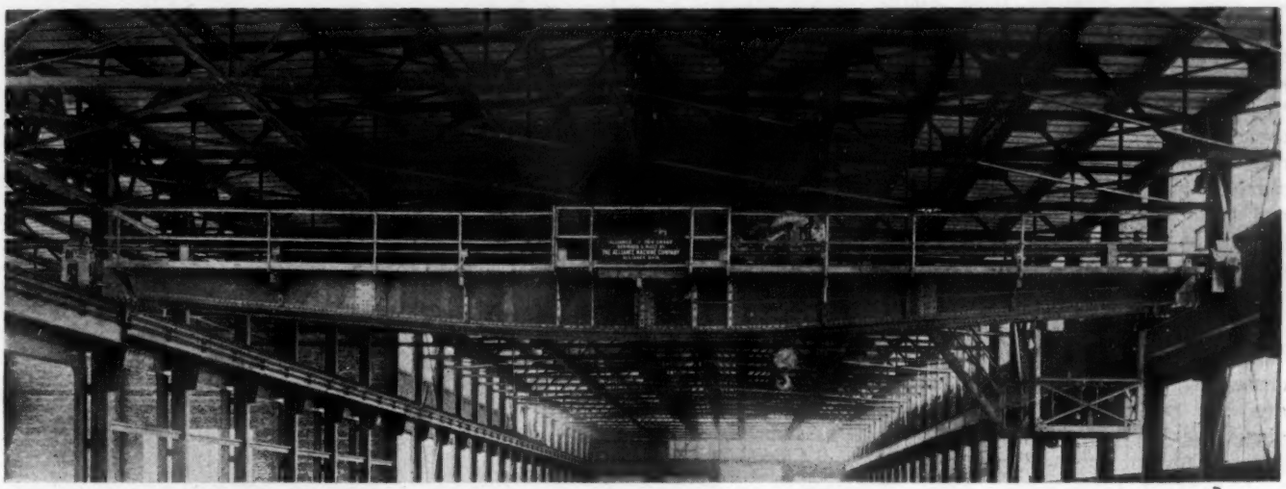
It was necessary to use more splices in the aluminum alloy girders than usually are found in steel girders because longer plates and angles were not available at the time the crane was fabricated. Aluminum alloys were not

used for the end trucks and trolleys because the urgent need for this crane did not allow sufficient time to redesign and cast these parts in aluminum.

The crane was installed in the new structural mill at the Massena, N. Y. works. In the same plant a standard steel crane of the same capacity and span length was erected for purposes of comparison. The two cranes were similar in design with the exception of the girders.

The light weight permits a saving in power owing to the smaller inertia to be overcome in starting and stopping the crane in its travel along the runway.

Tests have been made on the crane for performance and action under load.



View of the assembled crane as installed in the Massena plant of the Aluminum Co.

The maximum deflection measured was 1.09 inches. This occurred under a load of 34,500 pounds which represents an overload of 72.5 per cent based on the rated capacity of the crane. No measurable permanent set was found in the girders upon the removal of this load. Strain gage readings taken at the center of the span indicated no stresses which exceeded those computed by ordinary design formulas.

In the matter of performance, the aluminum alloy crane has proven to be satisfactory in every way. Several experienced operators have expressed the opinion that it is easy to handle and quick to spot. While the crane has not been in use long enough to obtain definite power requirements, indications point to a low consumption.

George W. Ziegler Machinery Co., Pittsburgh, has been reincorporated with 1500 shares of $100 par value each, to deal in machinery and supplies.

Gray Iron Group Extends Sectional Meetings

In connection with its policy of assisting members by the formation of local chapters, the Gray Iron institute has announced the first of a series of meetings in the eastern territory. The meetings will be held in the following centers on the dates indicated: Feb. 11, Hotel Statler, Buffalo; Feb. 13, Hotel Syracuse, Syracuse, N. Y.; Feb. 15, Hotel Penn Harris, Harrisburg, Pa.; Feb. 18, Manufacturers club, (tentative), Philadelphia; Feb. 21, Lord Baltimore hotel, Baltimore, Md.

All the meetings will start with a luncheon at noon, following which there will be a presentation of the various institute activities, indicating how members of the industry can tie into the institute program. Similar meetings being held in the western territory are finding favor. Arthur J. Tuscany, Terminal Tower, Cleveland is manager of the institute.

Central Alloy Installs Normalizing Furnace

A new continuous sheet normalizing furnace has been installed by the Central Alloy Steel Corp., Massillon, O., in the Canton, O., plant of the company, which produces heating operations in 15 minutes that formerly required 44 hours. The new furnace, which is said to be the longest walking beam type now in operation, was built by the Surface Combustion Co., Toledo, O. This installation permits uniform annealing of sheets and accurate control of grain structure. At normalizing temperature a fine grain is secured, whereas the old methods of box annealing usually causes grain growth. The new furnace is 100 feet long and 108 inches wide and is gas fired.

Mining Engineers Elect New Chairman

C. B. Murray, Crowell & Murray, Cleveland, recently was elected chairman of the Ohio section of the American Institute of Mining and Metallurgical Engineers, to succeed Col. F. B. Richards, M. A. Hanna Co., Cleveland. The election took place at a meeting of the section held at Cleveland, Jan. 23. W. L. Tinker, Lake Superior Iron Ore association, was chosen secretary of the organization. A feature of the meeting was an address by Dr. F. R. Van Horn, professor of geology and mineralogy, Case School of Applied Science, Cleveland, who described some of his experiences on a recent visit to Africa.

Bureau of Mines Issues Booklet on Mercury

Distribution and production of mercury throughout the world with particular emphasis on the situation in the United States comprises the subject matter of a new booklet issued by the bureau of mines, Washington, entitled "Mercury in 1928," by Paul M. Tyler. The statistics on the domestic industry were compiled mainly by H. M. Meyer, and the data on imports and exports were taken from the records of the bureau of foreign and domestic commerce by J. A. Dorsey. Complete statistical data and a survey of the situation are included in the report.

First Arc-Welded Pipe Line Goes Into Republic of Mexico

ARC welding of a pipe line in Mexico for the transportation of natural gas for the Compania Mexana de Gas, a subsidiary of the United Gas Co., has just been completed, marking the first arc welded pipe line to be put into operation in the southern republic.

This line is of 12-inch pipe and is 165 miles long, running from Aquilares to Roma, Tex., then across the Rio Grande river, via the International bridge to San Pedro, Mexico, and thence to Monterey, Mexico. It was constructed by Smith Bros. Inc., general contractors, Dallas, Tex., and was started from both the United States and the Mexican sides of the Rio Grande, the two gangs working toward each other.

Pipe Lined Up in Sections

In the construction of this line, as is customary on all lines fabricated by arc welding, the pipe was distributed along the right-of-way and lined up in sections, as shown in one of the accompanying illustrations, ahead of the firing line welders as they progressed. These sections are composed of from 6 to 8 lengths of pipe, lined up on skids and tack welded. After the tack welds have been applied to a complete section, the welder returns to the first joint and applies the burning-in bead half way around the circumference. The pipe then is turned and the remaining half welded. The operator's helper follows him across the section, cleaning the burning-in weld in preparation for the finished weld. While the finished weld is being applied the helper turns the pipe continuously so that the finished weld may be completed in one continuous operation. A Mexican

MEXICAN operator making a firing line weld is shown in the illustration above. At the left, laborers are lining up pipe sections preparatory to welding. Mexican laws required that native labor be used

operator making a firing line weld is shown in the illustration.

As the sections are completed they are placed over the ditch on skids and the tie-in welds are made by the bell hole gangs. In making these connections, the weld must progress around the pipe as it remains stationary, as it is impossible to turn the entire line.

Current for welding this line was furnished by 90 gas-engine driven welders, 48 used on the portion of the line in the United States and 42 on the Mexican portion. The welders were moved into position by caterpillar tractors. Electrodes or welding wire used were 3/16-inch diameter. The welders and electrodes were manufactured by the Lincoln Electric Co., Cleveland.

Difficulties experienced in the construction of the line were many and varied. It was laid over mountains, through primitive forest, and across rivers, and most of the labor used was inexperienced because of the Mexican law which required that a majority of the work be done by natives, residents of the state in which the work is done. Thus it was necessary to train inexperienced laborers to do the welding, as well as to operate the excavating machinery.

Warehouse Expands Plant in Detroit

MARKING the fourth large expansion program in Detroit in 12 years, Joseph T. Ryerson & Son Inc. have just completed in that city a new heated building with increased facilities for storing and dispatching warehouse products. The new unit, located at 1600 East Euclid avenue, is 120 by 300 feet, including five bays and a large transfer bay at one end with facilities for the inside loading of freight cars. Five cranes will move material from all parts of the building to the transfer bay, where another crane loads it onto the cars. This equipment, built for both large capacities and greater speed, facilitates dispatching of rush shipments.

Extraordinary truck loading facilities are provided by a driveway through the center of the building. This driveway is 20 feet wide and permits the loading of five trucks, one under each of the five cranes, at the same time; trucks also are loaded under the crane in the transfer bay. Industrial tracks, paved into the driveway in the transfer bay, enable the transferring of stock from this building to any part of the plant for combination loading. The floor of the building is on the same level as the railroad car floor, thereby forming a dock at the railroad tracks which simplifies the moving of material to and from the cars.

Variety of Material to Be Stored

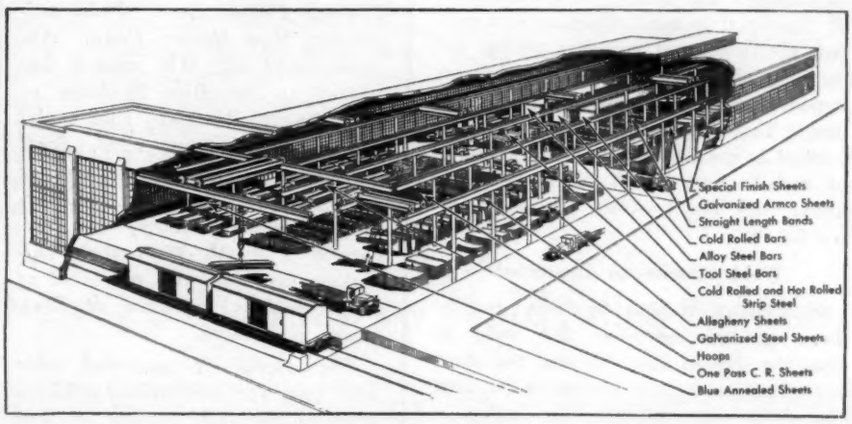
All kinds of sheets, Allegheny metal, Ascoloy, hot and cold-rolled strip steel, bands, and other high-grade steels which require exceptional care will be stored in this 36,000 square feet of heated warehouse space. Unit heaters circulate the heat and maintain an even temperature.

Plans for increased stocks are well under way, the most recent additions including over 500 sizes of cold-rolled steel, special sheets, mild-steel bars and bands, structural shapes, plates, reinforcing bars and other allied products. Special grades and sizes of these stocks are being carried to meet individual requirements of various industries. New lines of metalworking machinery and small tools also have enlarged the scope of machinery products.

Excellent facilities are available for customers who wish to call for material, an entire span in the new unit being devoted to this service. Pick-up orders are followed through by a separate office and plant force, to prevent confusion with delivery orders. In this way an unusually prompt service is maintained in supplying customers' trucks.

An open span 90 x 350 feet has been developed between the new unit and old buildings for storing and dispatching reinforcing bars, some contractors' supplies, and other material not affected by the weather. This area is served by both the Michigan Central and Grand Trunk railroads on separate sidings. Twenty-six carloads of steel can now be handled at one time on the Ryerson property. Many orders for truck delivery may be filled at one time in the large center driveway. Material is rapidly transferred to all parts of the span and to trucks and railroad cars with a large overhead crane. Equipment for bending and shearing has been installed for completing orders on material in the span, without moving it to other parts of the plant.

With a view toward future expansion, the Ryerson company has ground reserved to give an ultimate 110,000 square feet of added space. Of this amount, 67,500 square feet is partially developed and may be acquired readily as heated warehouse area by adding another floor to the present structure and enclosing the open span.



New heated warehouse building affords facilities for systematic storage of all varieties of steel products

With this increase, Joseph T. Ryerson & Son Inc. have one of the largest steel-service plants and the most diversified stocks of steel and allied products in the Detroit area. In addition to the Detroit unit, the Ryerson company is serving eight other industrial centers, with plants at Chicago, St. Louis, Cincinnati, Cleveland, Buffalo, Philadelphia, New York and Boston and sales offices in many other cities.

William H. Basse is manager at Detroit.

Quality of Cast Steel Is Attested by Welding Authorities

Deposition by Carbon Arc Process To Produce Sound Weld Described at Session of American Institute of Electrical Engineers' Convention

CAST steel equal in strength and ductility to the rolled steel of the parent metal may be deposited with a carbon arc, according to J. C. Lincoln, Lincoln Electric Co., Cleveland, in a paper which he presented before the welding session of the American Institute of Electrical Engineers in winter convention in New York, last week. Mr. Lincoln described in considerable detail the construction of the welding head which uses a carbon electrode and a paper string fed in just above the arc to produce a nonoxidizing atmosphere around the arc. The welding material by this method is usually supplied in the shape of a filler bar, which is laid directly above the butt joined plates to be welded.

Weld Specimens Inspected

Specimens welded by this method were ground down at the weld so that the welded material had the same cross section as the parent metal, and the pieces then pulled to destruction in a testing machine. In every case, according to Mr. Lincoln, the pieces broke outside the welded section. In some specimens two small holes were drilled through the welded portions and still the break came in the parent metal. Specimens of this character which had been pulled to destruction in a testing machine were passed to the audience for inspection.

The paper caused considerable discussion, much of which was in support of the potentially high quality of cast steel providing all conditions could be controlled properly. Prof. Comfort A. Adams, Harvard engineering school, Cambridge, Mass., said that the prevailing idea that castings *per se* are inferior to rolled material is pure nonsense.

The ductile strength of welds was discussed in a paper by Morris Stone, mechanical engineer, and J. G. Ritter, welding engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., which was presented by Mr. Stone. This paper pointed out the handicap which welding for structural purposes has experienced due to the comparatively low resistance to dynamic stress of the welded metal. The authors explained that this could be overcome by knowing definitely what resistance to dynamic stress welded metal would withstand, and then designing the welded joints accordingly. Curves were presented showing the relation between steady stresses and dynamic or variable stresses, and the results of many tests of different types of joints under vibrating or dynamic stress were explained.

Cathode Energy Analyzed

A highly theoretical paper presented by Gilbert E. Doan, Lehigh university, Bethlehem, Pa., analyzed the cathode energy of the iron arc. Dr. Doan, by attempting to set up a heat balance showing the condition at the cathode of an electric arc during welding, brought into prominence the possible values of many assumed constants. Active discussion of this paper which followed centered around the value of these constants. William Spraragen, secretary, engineering division, National Research council, in commenting on the paper, said that he thought it one of the most valuable contributions to the technical side of welding that had been made in a long time. He pointed out that only by such careful study and analysis can more about what actually takes place in the iron arc be made known. Mr. Lincoln, in discussing Dr. Doan's paper and also the paper immediately following his, which was presented by P. P. Alexander, research engineer, Thomson research laboratory, General Electric Co., Lynn, Mass., said that in his investigations he had found that for low-carbon electrodes the positive electrodes were consumed more rapidly than the negative, but that for high-carbon electrodes the reverse was true. In the case of electrodes with carbon 0.15 per cent he gave the rate of

Two Medals Awarded

IN CONNECTION with the winter convention of the American Institute of Electrical Engineers in New York last week, two medals were awarded.

The first, the Edison gold medal, was presented formally to Prof. Charles Felton Scott, Yale university, New Haven, Conn. Announcement of this award appeared in the Dec. 26 issue of IRON TRADE REVIEW. *The medal was bestowed upon Prof. Scott for his "contributions to science and art of polyphase transmission of electrical energy" by Prof. Harold B. Smith, Worcester Polytechnic institute, and president of the American Institute of Electrical Engineers.*

The medal is awarded once each year for meritorious achievement in electrical science or electrical engineering. In the past it has been presented to Elihu Thompson, George Westinghouse, Alexander Graham Bell, Nikola Tesla, John J. Carty, Michael I. Pupin, Robert A. Millikan, William D. Coolidge, and Frank B. Jewett. Professor Scott was the nineteenth recipient.

The second medal, the Lamme gold medal, was announced awarded to R. E. Hellmund, chief electrical engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in recognition of his contributions to the design and development of rotating electrical machinery. Formal presentation will be made at the summer meeting of the institute in Toronto this June. Previous announcement of this award appeared in the Jan. 30 issue of IRON TRADE REVIEW.

consumption of the positive electrode as 57 per cent, and that of the negative as 43 per cent. For electrodes of carbon 0.4 per cent he gave the rate as equal between the positive and negative electrodes. And for electrodes with carbon content 0.7 per cent he gave the rate for the positive electrode as 46 per cent and for the negative electrode as 54 per cent.

A paper on resistance welding by Byron T. Mottinger, the General Welder Co., Akron, O., was presented by title only in the absence of the author. The paper described several types of resistance welding and showed that while the efficiency may be low the method nevertheless competes with other methods of welding when applied to problems of mass production.

Power Pipe Standard Is Being Circulated

Information service department of the American Standards association, 29 West Thirty-ninth street, New York, now has available a draft of the proposed American recommended practice for power piping systems. The draft, section 2 of the code for pressure piping, is being circulated for review and criticism. The code covers the design of manufacture, testing and installation of power piping systems in steam generating stations, central heating plants, industrial process work and all distributing systems where the pressure is in excess of 15 pounds per square inch.

Report on Friability of Coal Specimens

Recently work was undertaken at the University of Illinois, Urbana, Ill., to determine a means of gaging the comparative friability of different coals. Results of this investigation are incorporated in bulletin 196 of the engineering experiment station of the university. Friability is the susceptibility of a coal to break down in handling. The report covers the results of several hundred individual tests on the breakage of coal, the principal form of test being to drop a weighted amount of sized coal from a measured height onto a platform of wood, steel or concrete.

"Manufacture of Structural Steel Shapes," a new illustrated lecture sponsored by the Bethlehem Steel Co., will be given by George A. Richardson, Monday and Tuesday evenings, Feb. 10 and 11, at the Auditorium, United Engineering Societies Building, 29 West Thirty-ninth street, New York. Nine reels of new motion pictures taken recently at the structural rolling mills of the Bethlehem Steel Co. will be shown.

Steel Treaters Add To Standard Practices

Published in the February issue of *Transactions* of the American Society for Steel Treating are seven recommended practices which will be included in the next edition of the society's *Handbook* to be issued about June 1.

The seven practices as approved by the recommended practice committee are as follows: "Constitution of Iron-Phosphorus Alloys," by Louis Jordon, senior chemist, division of metallurgy, bureau of standards, Washington; "Temperature Measurements in Molten Aluminum and Its Alloys," by Kirtland Marsh, United States Aluminum Co., New Kensington, Pa.; "Constitution of Iron-Molybdenum Alloys," by W. P. Sykes, incandescent lamp department, General Electric Co., Cleveland; "Physical Constants of Lead," by James E. Harris, research metallurgist, Bell Telephone Laboratories, New York; "Broad Aspects of the Zinc Industry," by C. S. Trewin, New Jersey Zinc Co., New York; "Constitution of Magnesium-Copper Alloys," by J. A. Gann and A. W. Winston, metallurgists, the Dow Chemical Co., Midland, Mich.; and "Manganese as an Alloying Element in Pearlitic Steels," by A. Oram Fulton, president, Wheelock, Lovejoy & Co., Cambridge, Mass.

Representatives of New Tool Company Hold Sales Meeting

THE illustration above shows the officers and salesmen of the recently organized Stanley Electric Tool Co., a subsidiary of the Stanley Works. The photograph was taken at a sales conference held in the home office in New Britain, Conn., during the first two weeks in January.

The new Stanley company which was recently formed through the merger of the Stanley Rule & Level Co., New Britain, Conn.; Crowe Safety Saw Co. Inc., Cincinnati; Ajax Hammer Corp., New York; and the Unishear Co., New York, as announced on Page 102 of the Jan. 30 issue of IRON TRADE REVIEW, will concentrate on the sale of electrically-operated hand tools manufactured by the four companies. These products include drills, screw drivers, bench grinders, aerial grinders, wood saws, stone saws, hammers and sheet metal cutting tools.

Officers of the company are: L. M. Knouse, president; Cedric Powers, vice president in charge of production; H. W. Blackman, secretary; L. W. Young, treasurer; and R. W. Chamberlain, sales manager.

Heating and Ventilating Field Favors More Steel

THE extent to which companies throughout the United States have gone into the manufacture of devices for the utilization of oil as fuel in domestic heating plants was indicated at the International Heating and Ventilating exposition, held at the Commercial museum, Philadelphia, Jan. 27-31. The growth of this business is reflected by the fact that 132,000 such installations were produced and sold in the United States during 1929. So far, the industry embraces almost entirely the manufacture of equipment for converting heating units from coal or some other fuel to oil. One company, however, exhibited a complete boiler with oil burner, the first complete oil-burning unit to be shown. Sales possibilities of this complete unit, of course, are restricted to new buildings. The industry which has sprung up in connection with oil burning equipment, however, revealed itself as an important consumer of castings and of various forms of steel.

Cast iron boilers continue predominant in the heating field, as indicated at this show, but the increased manufacture of steel boilers for heating purposes is causing inroads on cast iron in this field. A considerable number of companies exhibited boilers which were of steel practically throughout, the exceptions being auxiliary equipment, such as grate bars, doors and some other parts, which were castings.

Steel Boiler Jackets

The great majority of cast iron boilers exhibited at the show were provided with box-like jackets fabricated from sheet steel. There were some variations in the shape of the jackets; in some cases the heating units resembled phonographs of the cabinet type. In all cases, these sheet steel exteriors were decorated in keeping with the modern tendency toward the lavish use of color. In fact, the adaptability of steel for carrying coats of paint or enamel, seems to have suggested substitutes for steel. One exhibit showed a number of cast iron boilers encased in boxes made of a new patented asbestos product which was finished in marble effects. Comparatively few heating units were made of sheets with plain finishes.

A development revealed at the show was the substitution of copper tubing for steel tubing for feed lines between oil burners and oil tanks. The diameters in this service as a rule are ½ or ¾-inch. The copper tubing is preferred because of its flexibility and the ease with which it may be worked. For the lines from the street curb to the oil tank, which are generally 2 to 3 inches in diameter, steel pipe continues to be used.

A great expansion in the manufacture of radiator covers was indicated at the show, a large number of manufacturers exhibiting such covers. All were made of formed and welded steel, either plain or perforated sheets. These exhibits indicated where the sheet mills of the country are selling an increased amount of tonnage, at least for one purpose. They showed too that this industry provides an attractive market to manufacturers of colors and painting and enameling equipment.

One of the interesting features of the show was the great amount of floor space given over to copper and brass radiation units. In particular, a great many copper and brass radiators of the fin type were shown. Heintz Mfg. Co., Philadelphia, exhibited a new development, a fin-type radiator made of steel throughout. The main materials in its construction were steel tubing and strip.

New Steel for Burners

Some comment was heard at the show regarding the best materials available for manufacturing burners for oil consuming kitchen ranges which continue to be manufactured in enormous quantities in this country. In this connection, it was intimated that heat and corrosion resistant steel of the nickel-chromium series is about to be tried out in this use, in the hope that the burners, if constructed of this material, will have longer life than at present.

Steel Foundrymen Expect Better Business in 1930

REPORTS of excellent business coupled with progress in all lines of activity marked the meeting of the Steel Founders' Society of America, held at Chicago, Jan. 27-28. Members of the society, with practically no exceptions, reported operations satisfactory and affirmed their expectation of better business as the year progresses. A slight upward trend in castings prices was reported. Inquiries are plentiful from railway and agricultural sources and some increase is noted from truck and automotive firms.

Eighty-eight steel foundrymen, attended the second day of the meeting, at which time were reported the adoption of a seal and insignia of the society, establishment of an employment bureau, and plans to employ a technical advisor with experience in foundry and metallurgical lines. Discussion groups were held on new uses of steel castings, heavy castings, and light castings.

The first paper on handling pattern equipment, by W. J. Donnelly, George H. Smith Steel Casting Co., Milwaukee called attention to the wear and unavoidable damage expense now assessed against the foundry, which with the precedent of other trades, notably the replacement cost of cuts in the printing industry, should be borne by the customer. Prices on castings, too frequently, are quoted without due regard to type, suitability or condition of pattern equipment. The expense of rendering such equipment serviceable constitutes a heavy drain upon foundries, running in many cases to thousands of dollars a year. Furthermore, foundries themselves too often cannot agree on the best type of pattern equipment and consequently, patterns removed from one shop to another must undergo many costly changes which should be avoided. The speaker urged more general use of the standard pattern color markings of the American Foundrymen's association, the Steel Founders' society and other co-operating bodies. The foundry should advise with customers on the details of pattern and corebox equipment.

The second paper, by C. A. McDonald, Nugent Steel Casting Co., Chicago, covered detailed costs of repairs and maintenance labor. At a meeting of the board of directors on Jan. 27 it was decided that the next district meeting of the society will be held in Philadelphia, Feb. 27.

Employers Avoiding Discrimination Against Older Worker

Speakers at Personnel Administration Conference of American Management Association Find Age Often a Favorable Factor for Job Seeker

LABOR displacement through technological improvements may be more important as a means of redistributing population and providing labor supplies for new or rapidly growing industries than as a cause of genuine unemployment, according to Dr. D. D. Lescohier, professor of economics, University of Wisconsin, Madison, Wis., speaking before the Thursday morning session of the personnel administration conference of the American Management association, held at Hotel Statler, Cleveland, Jan. 29-31. Dr. Lescohier spoke on the effect and extent of technical changes on employment security and affirmed that scientific management, whether posing under that name or not, has directed the attention of business managers to the importance of quantitative measurement, to precision in planning, to careful records, to the systematic study of experience, to the wisdom of scrapping equipment and methods that have become obsolete, and to the effectiveness of meeting competition and obtaining markets by careful attention to the reduction of production costs and elimination of wastes.

Dr. Lescohier also said that the development of specialized, even professionalized personnel management, especially during the last 20 years, has been as important as increased mechanization in many concerns as a factor affecting employment.

Unemployment Is Topic

The meeting was separated into two units, a conference of the office management division on office personnel administration and a conference of the personnel division on employment security with particular reference to age and technical changes. Dr. Lescohier spoke at the latter as did J. P. Jordan, member of the firm, Stevens, Harrison & Jordan, New York, who fixed much of the blame for the difficulty of unemployed executives failing to secure employment on the men themselves. He stated, "Age in years as such not only is not actually a deterrent to the employment of executives but, in numerous cases, furnishes a positive argument in favor of their employment."

Speaking on age employment restrictions, Murray W. Latimer, Industrial Relations Counselors Inc., New York, presented some interesting statistics, pointing out that as the result of a survey covering a number of large firms employing over 3,000,000 workers, Industrial Relations Counsellors Inc. found that in 42 per cent of the companies employing 26 per cent of the total number of persons covered there was no age limit for hiring. In 40 per cent of the companies employing 61 per cent of the total, either all persons over a certain age were refused employment or else a high executive's consent was required. In 18 per cent of the companies employing 13 per cent of the men, there was no restriction on hiring, but pensions were not granted to persons hired over certain ages.

Hiring Age Limits Vary

Not all industries impose hiring age limits to an equal degree. Of the 1,900,000 persons employed by companies who refused to engage persons over a certain age, almost 80 per cent were on railroads or in public utilities. Only one-sixth were in manufacturing companies. It was concluded that the possibility of a person over 45 obtaining employment with a railroad or public utility was small, but over two to one for obtaining a job in manufacturing.

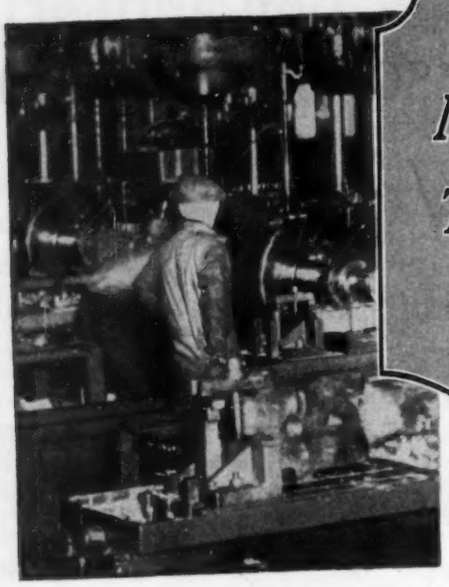
Shifting of interest from formal apprentice training to supervisory or foreman training, job training and management training was a trend in industry noticed by Byron F. Field, superintendent of training division, Commonwealth Edison Co., Chicago, and chairman of the industrial training group of the management association. Mr. Field spoke at the Thursday evening dinner session and also outlined the tendency of companies to spend training money indirectly in supporting regularly maintained public institutions rather than in subsidizing special schools or classes.

"Humane and successful" were the terms applied to the dismissal wage policy of the United States Rubber Co., a wage paid when, due to reorganization, a factory is closed permanently or a process definitely discontinued. The policy was outlined by Miss E. H. Little, assistant supervisor of industrial relations, United States Rubber Co., New York. The dismissal wage is paid on the basis of one week's pay for each year of employment to persons with 15 years of service and to those 45 years of age with 10 years of service. In closing four factories, 502 persons have benefited in amounts varying from $125 to $2000.

In a paper entitled "What Are the Psychological Factors of Obsolescence of Workers in Middle Age," Elliott Dunlap Smith, professor of industrial engineering, Yale university, New Haven, Conn., contended that middle age obsolescence was due primarily to stagnation rather than mere age. Professor Smith reflected that when men become obsolete in middle age, it is usually because they cannot conform to the demands of modern industry or to the progress of engineering development rather than because they cannot bear the additional psychological burdens brought about by the mistakes and irregularities of management.

Automotive Engineers To Meet in St. Louis

The Society of Automotive Engineers will hold its national aeronautic meeting at the Hotel Jefferson, St. Louis, Feb. 18-20 during the International Aircraft Exposition. Five sessions and 12 papers devoted to aeronautic engines, fuels, instruments, production and radio are scheduled.



New Machine Tools and Shop Equipment

"Magnified and shaped in steel, here is the final energy, the seed that fertilizes space."
—MacKnight Black

Remedies for Trade Evils Sought

PROCESSES of an economic nature by which the machinery industry can be bettered were introduced for discussion at the fifth conference of machinery and equipment associations, held Monday in Washington under the leadership of Chairman E. F. DuBrul, general manager, National Machine Tool Builders' association. Representatives at the conference had expressed a preference for certain subjects and they were discussed in the order of their adjudged importance. The subjects were: Controlling the trade-in evil; uniform cost accounting; establishing normal depreciation rates; time or installment sales; industry statistics; promotion of standards; market research; stabilization of employment and production; association activities, and cross licensing of patents.

The trade-in evil long has been a bugbear in machinery buying and selling. The granting of excessive allowances on old machines for the purpose of securing an order for new machines, while a bright feature for the customer, is destructive to competition and amounts to an abusive practice. Methods for controlling this malpractice are said to have been devised in some localities but concerted remedial action has been sought by association dealers.

The development of a uniform cost accounting system is a step which has received the favorable sanction of a

(*Continued on Page* 93)

Iron Trade Review's Calendar of New Equipment

Item	Comment	Builder	No.	Date Described	Page
Knife	Chromium-plated blade for wood planers	Simonds Saw & Steel Co.	12	Jan. 16	48
Grinder	Pneumatic grinder and buffer; pistol-grip handle	Chicago Pneumatic Tool Co.	13	Jan. 16	48
Crane	Full-circle, long-boom, broad-gage crane and dragline	American Hoist & Derrick Co.	14	Jan. 16	48
Stand	Radial drill stand; sensitive lever feed	Hisey-Wolf Machine Co.	15	Jan. 16	49
Welder	Universal four-corner flash welder; synchronized	Taylor-Winfield Corp.	16	Jan. 16	49
Hammer	Motor-driven head on board drop hammer	Chambersburg Engineering Co.	17	Jan. 16	49
Grinder	Semiautomatic plunge-cut type	Cincinnati Grinders Inc.	18	Jan. 16	50
Lockwashers	Two opposing ratchet disks, locked to bolt and nut	Clegg Lock Washer Corp.	19	Jan. 23	40
Cement	Plastic high-temperature cement with chromite base	Botfield Refractories Co.	20	Jan. 23	40
Grinder	Hydraulic roll grinder for small diameter rolls	Landis Tool Co.	21	Jan. 23	73
Tractor	Industrial tractor, gasoline powered, 1500-pound pull	Whitehead & Kales Co.	22	Jan. 23	73
Tongs	Pipe and fittings tongs; flat link or cable chain	J. H. Williams & Co.	23	Jan. 23	74
Motors	Induction type; high speed and heavy duty	Westinghouse Electric & Mfg. Co.	24	Jan. 23	74
Bearing	Self-lubricating bronze type	Johnson Bronze Co.	25	Jan. 30	66
Micrometer	Pocket-size dial micrometer; usable as snap gage	B. C. Ames Co.	26	Jan. 30	66
Grinder	28 x 40 x 48-inch plain self-contained type	Cincinnati Grinders Inc.	27	Jan. 30	99
Welder	Automatic welding machine for wire wheel assembly	Lincoln Electric Co.	28	Jan. 30	99
Milling machine	Complete redesign of plain-type machine	Brown & Sharpe Mfg. Co.	29	Jan. 30	100
Sharpener	Full-automatic crosscut and rip saw sharpener	Samuel C. Rogers & Co.	30	Jan. 30	100
Locomotives	Gasoline powered; 20, 25 and 30-ton capacity	Fate-Root-Heath Co.	31	Feb. 6	91
Hone	Vertical cylinder hone; hydraulically reciprocated spindle	Barnes Drill Co.	32	Feb. 6	91
Speed reducers	Right angle drive type; range of 15 to 1 to 518 to 1	Falk Corp.	33	Feb. 6	91
Brake control	For crane hoists, etc.; dynamic, magnetic contactor	Electric Controller & Mfg. Co.	34	Feb. 6	91
Instruments	Voltmeters, milliammeters for low power circuits	General Electric Co.	35	Feb. 6	92
Hardness tester	Motor-driven brinell-type for precision work	Pittsburgh Inst. & Machine Co.	36	Feb. 6	92
Press	Utility press for toolroom; 80,000-pound pressure	Simplex Tool Co.	37	Feb. 6	92
Grinders	Single-speed and multiple-speed types; special design	Ransom Mfg. Co.	38	Feb. 6	92
Nut	Recessed for gasket; makes leakproof joint	Columbian Steel Tank Co.	39	Feb. 6	93
Furnace	Gas-fired laboratory furnace; heats quickly	Babcock & Wilcox Co.	40	Feb. 6	93
Saw	Wood saws; two sizes, for 12x12 and 12x20-inch timber	DeWalt Products Corp.	41	Feb. 6	93

Locomotives Powered by Gasoline Engines

No. 31

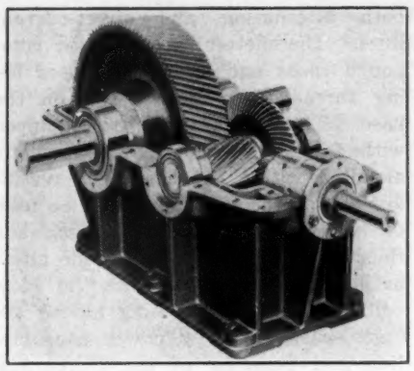
Fate-Root-Heath Co., Plymouth, O., has introduced a new line of gasoline locomotives comprising two models; one in three sizes of 20, 25 and 30 tons, powered with a 6-cylinder engine; and the other in two sizes of 30 and 35 tons, powered with an 8-cylinder V-type engine. The frame is a patented bar-steel type of construction designed to use equalized semi-elliptic springs to the best advantage. Springs are 48 inches long and 4½ inches wide. A new and special feature of the locomotive is the incorporation of both side and cross equalizers, giving a true three-point suspension and making for smoother riding. Clutch size has been increased to 16-inch diameter with six facings for the 6-cylinder engine and eight faces for the 8-cylinder engine. The locomotives are equipped with two 12-volt starters, direct-driven air compressors and other improvements. The accompanying illustration shows one of the 30-ton 6-cylinder models.

Vertical Cylinder Hone Handles Large Work

No. 32

Barnes Drill Co., 814 Chestnut street, Rockford, Ill., has announced the design of a heavy-duty vertical honing machine with a hydraulically reciprocated spindle, suitable for honing all types of cylinders such as diesel and similar engine cylinders, air compressor cylinders, steam, oil and gas engine cylinders, hydraulic cylinders and in fact all other large diameter or long cylinders. The vertical honing method is preferred usually due to the resulting economy of floor space, greater convenience of handling and the natural free suspending of the hone from a full-floating driver. The machine has 36-inch swing and hones cylinders up to 20 inches in diameter by 54 inches in length. The ten splined spindle is 3 inches in diameter and has a stroke of 56 inches. The spindle and hone assembly are balanced by an air counterbalance mechanism. The table carrying the work rolls in and out on ball bearings, propelled by an air cylinder to provide for the convenient loading and unloading of heavy cylinders. Duplex hydraulic cylinders are provided for the reciprocating motion as well as duplex torque bars and bracket to eliminate vibration at any speed of reciprocation. Both length and rapidity of stroke of the spindle are controlled hydraulically.

Eight quick change spindle speeds are available. Radial ball bearings and tapered roller bearings are standard throughout. Large diameter cylinders, if reamed to within 0.005 to 0.008 inch of size, may be honed on this machine to an accuracy of within 0.001 inch. The honing stones, usually from 4 to 12 inches long, pass over portholes and recesses in the cylinders and leave a true edge about these openings. The length of the hone stroke may be set for just the right amount of over-run of hone at each end of the cylinder. This is an important feature, preventing bell mouth, barrel shape and taper. Height of the machine to the extreme top with the spindle up is 18 feet 8 inches.



No. 33—Right-angle drive speed reducer, cover removed

Right-Angle Shafts on Speed Reducers

No. 33

Falk Corp., Milwaukee, has introduced a line of right-angle drive speed reducers to supplement its line of parallel shaft drives. The new series includes both horizontal and vertical shafts. A feature of the new mechanism is a combination of single helical and spiral bevel gears. It is pointed out that single helical gears for the final reduction are easier to assemble than herringbone gears and that their efficiency is practically the same. The reducer is said to run cool and have an initial efficiency of over 95 per cent. Another significant feature is the reversible construction of gears and shafts. If the gears become worn after years of service, shafts can be turned end for end to permit using the opposite and unworn sides of the teeth.

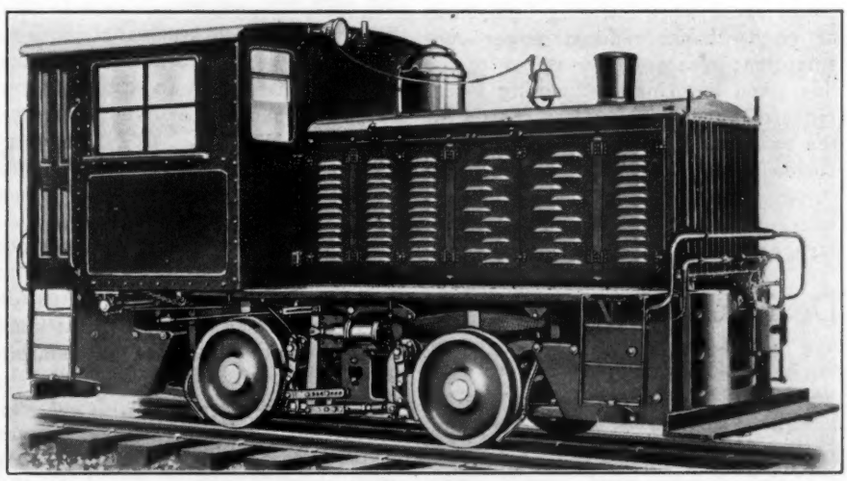
Various Ratios Available

Ratings on the new line range from 1/16 horsepower at 100 revolutions per minute on the smallest unit to 565 horsepower at 100 revolutions per minute on the largest. Ratios are from 15 to 1 to 518 to 1. The lubricating system is simple and self-contained. A continuous splash system keeps a film of oil on the working faces of gear teeth at all times. A complete line of welded steel motor beds has been developed to accommodate all motors coming within the capacities of the reducers. The accompanying illustration shows the gearing arrangement of one of the reducers, the cover being removed.

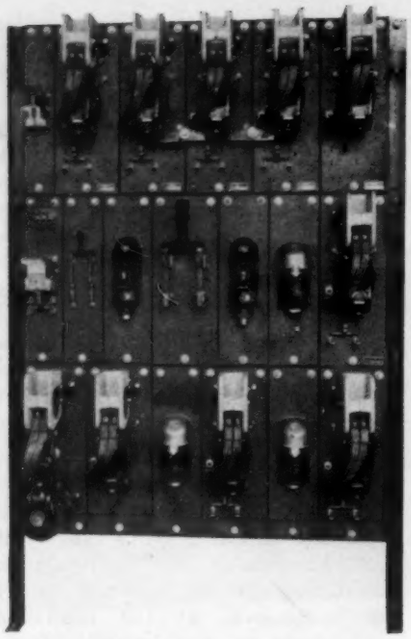
Dynamic Braking Control Gives Quick Release

No. 34

Electric Controller & Mfg. Co., 2700 East Seventy-ninth street, Cleveland, announces a new dynamic braking controller of the magnetic contactor type for crane hoists, bucket hoists and ore and coal bridges. Dynamic braking hoist controllers often have been subject to criticism in that the release



No. 31—Gasoline-powered industrial locomotive of 30-ton capacity



No. 34—Control board of dynamic braking mechanism for cranes

of the solenoid brake was sluggish in the lowering direction, enforcing a pause on the first contact point of the control to give the brake an opportunity to release, before advancing the controller. Instant release of the brake on the new controller is claimed to be effected by passing the full line current through the brake circuit on the first point of lowering, instead of one-third the line current, as formerly done. The operator no longer need hesitate on the first contact but may move the master controller instantly to any desired speed point. This improvement is said to insure faster crane operation, more accurate control of short, quick movements and better ability to spot loads.

Faster Speed When Lowering

Other salient features of the controller, a view of which is shown in the accompanying illustration, are faster speed when lowering light loads or empty hook; reduced power consumption; greater power return to the line when lowering overhauling loads; reduced current peaks; less heating of the motor; less contactor wear; fewer movements when inching for accurate stopping of load; improved shunt contactors; time-current acceleration relays, and nickel alloy grid resistors.

Designs New Voltmeters and Milliammeters

No. 35

General Electric Co., Schenectady, N. Y., has placed on the market small voltmeters and milliameters, in 2¼ and 3-inch cases, for use on both alternating and direct-current lines. The meters have molded compound cases and bases, the cases being threaded so as to screw on the base. The instruments are equipped with full-wave copper-oxide rectifiers mounted within the case. The rectifiers permit the instruments to be used on alternating-current circuits, and thus make it possible to provide alternating-current instruments in low voltage and current rating having the high sensitivity, low power consumption and damping of the D'Arsonval element. The voltmeters are available in ratings from 2 to 150 volts and the milliameters in ratings from 0.5 to 15 milliamperes. The instruments have numerous applications where in general the power involved is small.

Brinell Instrument Is Precision Type

No. 36

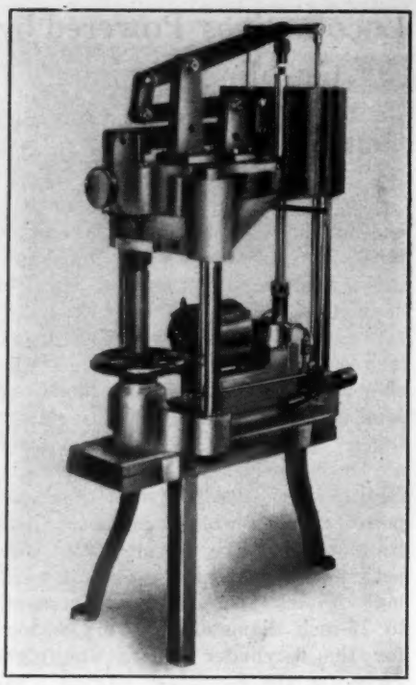
Pittsburgh Instrument & Machine Co., 1026 Reedsdale street, Pittsburgh, is placing on the market an improved motor-driven hardness testing machine of the brinell type. The machine shown in the accompanying illustration is the floor type. The load is applied gradually through the usual system of weights and levers and is applied for a fixed and controllable itnerval.

As a result of recent investigation it has been found that 8 seconds is approximately a correct length of time for the gradual application of the load; the machine is so adjusted to apply the load gradually for this interval and also to apply the fixed or full load for 30 seconds. In routine testing, however, it is often necessary to sacrifice accuracy for speed; the machine can be regulated to give any rates of application for both the gradual load and the full load. At a result of these improvements, brinell testing with this machine is said to eliminate largely the personal equation and to produce uniform and consistent test data.

Utility Press Has Wide Variety of Uses

No. 37

Simplex Tool Co., Woonsocket, R. I., is manufacturing a new type of utility press designed particularly for use in the toolroom and machine shop, for such operations as shearing soft punches in hardened dies, trying out forming, blanking, piercing and bending dies; and general straightening, pressing and bending work. The press exerts a pressure



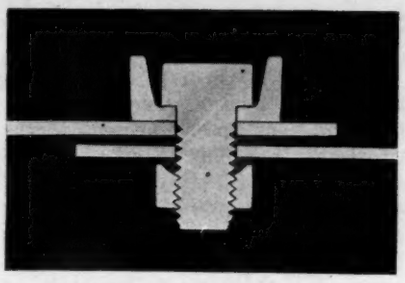
No. 36—Motor driven hardness testing machine of brinell type

of 80,000 pounds and will bend cold a piece of steel ½ inch thick by 4 inches wide up to a 90-degree angle. Three different leverages are provided, each having different speeds and power. Low speed has a power ratio of 4000 to 1. Leverages can be changed quickly to suit requirements. A ratchet wheel on the plunger spindle is mounted on ball bearings for ease in spinning the plunger to and from the work. Five quick height adjustments are available. Overall height of the unit is 5 feet; width between the uprights is 21 inches. Travel of the screw is 8 inches. Space between the horizontal side members is 8 inches. Equipment furnished includes two combination blocks which are used as parallels, straightening V's, and bending dies; V nose for straightening and bending; one plain nose; and one bar.

New Grinders Are Single, Multiple-Speed Types

No. 38

Ransom Mfg. Co., Oshkosh, Wis., recently has constructed two new types of grinding machines, one a constant-speed type and the other a multiple-speed design. The constant-speed type was built for the Ford Motor Co. and has a capacity of two 36 x 3-inch wheels running at a speed of 9500 surface feet per minute. The motor, of either 15 or 20-horsepower rating, is mounted in the base on a platform which is ad-



No. 39—Section through liquid proof joint showing use of recessed nut

justable up and down by means of a screw at the front of the machine. The motor drives the spindle through a flexible-rope drive. Spindle is 4⅞ inches in diameter and is mounted on two large ball bearings. Rest brackets are adjustable up and down. Guards are of rolled steel plate, electrically welded and are provided with exhaust pipe openings at the rear. The doors are hinged and held shut by means of steel latches.

Three Speeds on Second Unit

The other grinder has capacity for two 24 x 4-inch wheels with 2½-inch bore, flanges being 8 inches in diameter. A 7½-horsepower variable-speed motor is the power unit with speeds of 900, 1200 and 1800 revolutions per minute. Arbor speeds are in proportion. The machine is equipped with pushbutton control for starting and stopping and also a three-button speed switch. When one speed switch is thrown the other two are padlocked, thus preventing any inadvertent change of speed. At a slightly additional charge a controller device can be attached below the wheel, which has to be lowered before the wheel can be changed. This controller arm automatically operates a selective switch which gives the correct speed for that diameter wheel. In this way all possibility of overspeeding is avoided and the machine will operate automatically at the proper speed when the arm is raised to the wheel.

Recessed Nut and Gasket Make Leakproof Joint

ITR No. 39

Columbian Steel Tank Co., 1505 West Twelfth street, Kansas City, Mo., recently has designed a special type of recessed nut for use in bolted tank assembly work where a liquid proof joint is required. The nut, a section of which is shown in the accompanying illustration, is provided with a small recess in the face which fits against the plate, into which a small gasket fits. With the use of the recessed nut, the packing may be punched by machine, forming a clean hole for the bolt; the gasket then is placed over the bolt and pressed into the recess as the nut is tightened, resulting in what is claimed to be an absolutely liquid proof joint. This does away with driving the bolts through the packing and depending upon the ragged edges of the packing to crowd around the bolt and insure leakproofness. The recessed nuts are made in standard sizes and can be furnished either square or hexagon.

Laboratory Furnace Will Heat Quickly

ITR No. 40

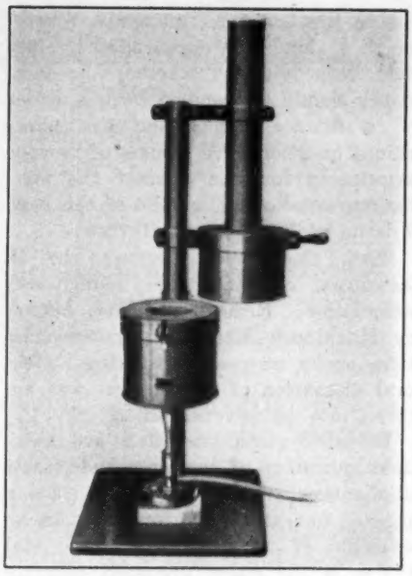
Babcock & Wilcox Co., 85 Liberty street, New York, has developed a small gas-fired laboratory furnace, fitted with an atmospheric burner and capable of maintaining a temperature of plus or minus 10 degrees Fahr. for several days if equipped with the usual gas pressure regulator. Tests made on the furnace show that it can be brought from room temperature up to 2500 degrees Fahr. in about 30 minutes and to 2000 degrees Fahr. in about 15 minutes. Maximum temperature is somewhat over 2600 degrees Fahr., using ordinary manufactured illuminating gas under 3-inch water gage pressure. The builder claims the unusual time-temperature operating characteristics are attributable to the use of proper gas velocities in the furnace, the stack proportions, an effective baffling arrangement and a special type of refractory lining with low heat conductivity. Either natural or artificial gas may be used as fuel, though temperatures will be slightly lower with the former.

As shown in the accompanying illustration, the furnace is compact, which feature combined with the insulating effect of the refractory lining results in a convenient and relatively cool laboratory furnace. Suggested applications for the furnace are for calibrating thermocouples from the freezing points of metals; making melts of nonferrous alloys for test specimens; melting samples of glass, glazes and enamels; and burning small bodies of ceramic materials.

Designs Two New Heavy-Duty Wood Saws

ITR No. 41

De Walt Products Corp., Lancaster, Pa., announces the development of a new type of heavy-duty cutting equipment, portable saws for cross-



No. 40—Gas-fired laboratory furnace

cutting and dadoing 12 x 12-inch and 12 x 20-inch timber on the job. Material is fed through the saw by a hand ratchet gear feed or by chain feed on the arm of the machine. This arm may be raised or lowered to the depth of the cut and saw blades up to 36-inch diameter are provided to handle 12 x 20-inch material, or a 16-inch dado head may be used to dado up to 3 inches. The saw blade operates at 1750 revolutions per minute and is direct driven by a motor operating on either 2 or 3-phase current at 220 to 550 volts. The saw is built in two models for cutting the two previously mentioned sizes of material. The larger model is mounted on an all-metal table, equipped with steel conveyor rollers for easy handling of the timber. The elevating device is operated by a wheel in front of the table.

Remedies For Machinery Trade Evils Sought

(*Continued from Page* 90)

large group of machine tool interests. Interesting comments upon the question of cost accounting were contained in an address made by William B. Castenholz, Castenholz & Dittmar, Chicago, at the twenty-eighth annual convention of the tool builders' association, held last October at Briarcliff Manor, N. Y. Co-operation with the bureau of internal revenue was suggested in arriving at a basis for normal depreciation rates. It was the consensus of opinion that unless action is taken to establish basic depreciation rates, the industry will be the loser.

Installment sales for the past several years have been debated pro and

con by hundreds of economists. Whether they should be encouraged by machinery people and whether the sales paper should be handled by the dealer or a finance corporation are paramount questions. A resume of various arguments for and against the matter appeared on page 1184 of the Nov. 7 issue of IRON TRADE REVIEW.

Time sales were discussed by R. Esselborn of the Bakery Machinery association. Richard McClure, Laundry Machinery Manufacturers' association, spoke on cost accounting. General discussion of this subject was entered into by several others.

Industry statistics often are valuable indicators of certain trends, their application and significance being pointed out at the conference. As an example of interesting industry statistics is the chart prepared recently by Mr. DuBrul, which traced over a period of years the trends of interest rates and the machine tool index curve compiled by the tool builders association. This chart was reproduced on page 71 of the Jan. 23 issue of IRON TRADE REVIEW. A definite lag was established between the peaks and depressions of the machine tool curve and the inverted interest rate curve. From this lag it was suggested that it might be possible to forecast machine tool demand for 1930 with a fair degree of accuracy.

Speaking before the conference, Mr. DuBrul stated that in his opinion trade associations should take up statistical work first, codes of ethics second and cost accounting third.

Exploitation of Markets Unwise

Co-operation of the machinery industry has been sought in the introduction and promotion of standards, in line with the increased activities of the American Standards association. Another problem which has confronted the industry is the unwise exploitation of markets, that is, the sale of a machine to a customer whose limited facilities make the overhead which the machine imposes too great to realize a profit for the user. This has a weakening effect on the market, bringing up a bad competitive situation and discussion at the conference brought out the necessity for alleviating this condition. The question of stabilization of employment was introduced in the attempt to make clear just what is expected of the machinery industries in co-operation with the program of the recent conference on unemployment, brought together by President Hoover. Urging the making of replacements during the present period of business depression, instead of delaying until the next period of peak activity, the conference showed great concern in the matter of stabilization of production, and improvement of methods and equipment.

Hugh P. Baker, manager of the trade association section of the National chamber of commerce, spoke at the meeting Monday on the business survey conference and trade associations, claiming that the objective of the business survey conference was accomplished and predicting that as the result of the committees appointed there will be a continued inflow of business condition reports from the various industries.

"The business outlook is reasonably bright," Mr. Baker added.

Stabilization Problems Complex

A paper was presented by E. W. McCullough, manager of the department of manufactures of the national chamber of commerce, entitled, "Stabilizing Employment Through Management Control." Mr. McCullough said that it is "recognized that the problems involved in stabilizing employment in the machine tool industries are more complex than those found in some other lines."

The matter of cross-licensing of patents came in for a share of the discussion, reflecting an increasing interest in the subject. Methods of expanding the activities of the attending asociations so that each might provide some service which would benefit other groups of machinery builders, were debated also. Free trials in machinery sales and the 13-month calendar were other minor topics.

During the course of the conference a census was taken of business conditions in the various industries represented which showed business in general to be good. Road builders reported business satisfactory; crane interests claimed that the Hoover program had brought about noticeable improvement; builders of bakery machinery reported normal business. Orders for diesel engines have slumped a little but with no cancellations. Die manufacturers expect normal business by April; heavy inquiry and a fair bulk of orders characterize the refrigerator business. Flour mill machinery builders are receiving heavy inquiries, machine tool business is good, pump interests report December a better month than either November or December, 1928, hydraulic machinery business for 1929 totaled 20 per cent above the 1928 figure, and knitting machinery interests report business progressing satisfactorily.

The owners of the Lynn furnace established a furnace and forge at Braintree, Mass., in 1648 and added a refinery forge to the plant at Lynn.

Sperry Receives Medal

Dr. Elmer A. Sperry, chairman of the board, Sperry Gyroscope Co., Brooklyn, has been presented the American Iron and Steel Institute medal, one of the two medals given by the institute in memory of its founder and first president, Elbert H. Gary. The presentation was made by Charles M. Schwab, president of the institute, at a recent meeting of the board of directors of the institute at the Metropolitan club. Award was annonuced at the general meeting of the institute Oct. 25, 1929, at which time Dr. Sperry was in Japan as a delegate to the World Engineering congress in Tokio.

Dr. Sperry was chosen as first recipient of the award because of his paper "Nondestructive Detection of Flaws," in which he told of the method he had developed for detecting flaws in steel rails, later applied also to the testing of welds in bars, plates and rods.

This is one of two similar medals given by the institute. The other medal, known as the Gary Memorial medal, for distinguished achievement in the iron and steel industry, was presented for the first time last May to James A. Farrell, president of the United States Steel Corp.

Large Uses of Steel in Small Ways

(*Concluded from Page* 81)

inches high over the front of the toes and 5 inches high over the center of the foot. The shape of the guard not only protects the toes of the wearer, but the arch as well.

The guard is fastened to the foot by a strap laced through perforations, carried to and wrapped around the ankle, and fastened to a buckle adjusted to the other end of the strap.

Many types of safety shoes are in use, and in some of them a fine steel wire mesh is imbedded in the leather forming the toe portion to reinforce that against heavy weights. The amount of steel thus employed, however, is small.

The National Slag association, 937 Leader building, Cleveland, has published a 43-page pamphlet entitled "Report of Investigation of Crushed Blast Furnace Slag as a Medium in Sewage Trickling Filters," by Charles C. Hommon, consulting sanitary engineer, Canton, O. This booklet contains field and laboratory data on the use of slag as a filter medium.

Editorials

Europe Girds for Lead in Steel

RATIONALIZATION of steel plant has become a world-wide process in the effort to obtain greater efficiency and thus power to compete in the world market. The process consists mainly in consolidations which concentrate production in efficient units and abandon high-cost operations. It has been going on in this country for more than a quarter of a century and still is in progress. Recent abandonment of blast furnace stacks and other production units by strong producers shows the continuing practice.

Since the war Germany has made a strong point of this method of regaining her lost markets and a great deal of money and effort have been spent. At present production control has been gathered into a few strong hands and obsolete plant is being put in the discard rapidly.

With the formation of a national agreement between Belgian steelmakers the stage is set for an international agreement growing out of the present European entente, which would unite all of continental Europe in one great combine to control production, distribution of orders and prices. Forward-looking steelmakers already see the possibilities of such an organization.

Great Britain has not participated in the present entente but has suffered severely by imports of steel from Belgium whenever prices on the Continent have been low. Whether she will become a member of the proposed international syndicate later is a point to which continental producers are giving thought.

Be that as it may, British steel interests are engaged in a strong campaign to centralize control of steel and numerous progressive consolidations have been made and still are under way. Immediate effects in abandonment of obsolete plant have been seen and enlargement of operations at the more efficient plants has taken place at the same time. The English Steel Corp., formed a year ago by merger of Vickers-Armstrong and Cammel, Lairds, has closed the Yorkshire Iron Works, at Penistone, and the Ebbw Vale Steel, Iron & Coal Co., a Welsh interest, has closed its by-product plant at Victoria.

Close study is being made of possibilities of savings by concentration of production in efficient plants, lessened overhead and other economies, at present directed toward better competition with Germany and America, but perhaps in the long look to a position making membership in the international syndicate or entente of value.

The present pending amalgamation involves Dorman, Long & Co., which recently absorbed Bolckow, Vaughan & Co., and the so-called Furness group, which includes the Cargo Fleet Iron Co., South Durham Steel & Iron Co., Wearsdale Steel, Coal & Coke Co., and the Broomhill collieries. These concerns include practically all the iron and steel interests on Teesside. Another merger now in the making involves the properties of Guest, Keen & Nettlefolds Ltd. and Baldwins Ltd. Capital involved in the former merger is about £15,000,000; the latter about £5,000,000.

X-Ray Equipment Goes Into Plant

DECISION to subject a lot of heavy cast-steel fittings to the searching eye of the X-ray in an effort to detect any internal defects existing in the castings recently necessitated a complete change in the customary procedure of testing. Many of the fittings weighed over 3 tons; evidently they could not be taken to the laboratory for testing, so the laboratory was taken to them. The X-ray booth, power plant and other auxiliary apparatus were transported to the plant where the castings were to be used, and erected in one corner of the building.

The castings were designed for a high-pressure steam installation in the East and it was essential that their soundness be certified before use; hence the plan to test them with X-rays. Booths containing the X-ray cassettes and the power equipment were shielded carefully with lead sheathing and every effort was made to insure safety to the X-ray technicians. A track was laid into the booth and the castings set in position for X-raying upon small cars which then were moved into the booth under the cassettes, the films previously having been adjusted within the casting to be exographed.

This is said to be the first instance of X-ray equipment powerful enough to examine steel 3 inches thick being employed as a portable unit. Undoubtedly it marks the advent of a new era in X-ray work, when the equipment can be moved from one plant to another to carry out miscel-

laneous inspection work on a variety of steel parts.

New Uses Speed Zinc's Recovery

THE zinc market is emerging from the fog of depression. It has recovered ¼ cent from the low point of 5.00c a pound. The bottom price, the lowest since postwar deflation, was more than 25 per cent below the price that held from midsummer until midautumn. The break was the worst among the metals. It meant a substantial financial loss to many mines and smelters.

Like many market breaks, the recent drop in the zinc price probably was overdone. At any rate, compared with other metal markets, this fall in value seemed to exaggerate the drop in consumption. Under such conditions, it was natural for the price to snap back quickly when buying began. And zinc producers hope the price will recover further. They do not want to rush the market, lest it be crowded into a false position, but they would like to see the price get back soon to 5.50c.

At the latter figure they would not want to see the market stop, as that would not mean a profitable market for many producers, but it would represent a good start toward the average of 6.509c for 1929.

While the market is getting a brighter outlook, it has a long road to go before it arrives under cloudless skies. The question of further price recovery depends not only on the amount of buying following the recent increase in business but it also has a large relation to a highly complicated world market production.

To the latter fact producers are not blind. In fact, it has seemed at times lately that they have been working under a production complex. Many have feared their own creature. They have followed Jeremiah and looked at the woe to come. This depressed attitude has been promoted by the difficulties of the European zinc cartel. Electrolytic smelting is increasing and complicating the problem.

But new uses for zinc are opening up through improved metal, and present cheapness ought to spur new uses.

Steel Helping Solve Farm Problem

LONG range views of the farm implement industry indicate a favorable year despite prospects that sales of spring tillage tools may be spotty. Possibilities that the spring months may reflect the lighter 1929 domestic crop volume only serve to inspire hope of higher farm commodity prices and enhanced buying power of the farmer later in the season. Despite the fact that implement makers for several months have been building up 1930 stocks, conservative estimates are that from 65 to 75 per cent of the probable needs for equipment remains outstanding.

Efforts being made to restrict the increase in crop acreage may be expected to lead to an improved balance as to production and demand for the implement builder as well as the farmer. Finished steel and other products ordered out in recent months by implement and tractor works have provided important fill-in tonnage for steelworks and castings plants in western territory. The prospect that some of the tractor builders are looking to a record year gives further promise, as tractors are adding materially to the agricultural consumption of metals. Increased use of machine processes in farming may place the implement maker as a still more important user.

Low Prices To Be a Drag on 1930

OUTLOOK for profits in the steel industry during 1930 presents a picture considerably less attractive than a year ago when producers were entering the busiest year in history. Financial reports for 1929 by seven leading companies show an increase in net profits of 70 per cent over 1928. Even the poor activity of the fourth quarter, which witnessed a decline of 15 per cent in ingot production compared with the year before, failed materially to disturb the excellent record of the preceding nine months. Fourth quarter profits of seven companies in 1929 were 24 per cent ahead of those for the 1928 period although this was accounted for largely by the two largest producers, the remaining five reporting a 19 per cent decrease.

Low steel prices and reduced demand cloud the 1930 earnings prospect. The downward trend in prices that commenced in May has continued through January, bringing quotations on most finished products below the levels of a year ago. Bars, shapes and plates at Pittsburgh are off $1 to $2 a ton. The decline in sheet prices ranges up to $4. Wire products have dropped from $2 to $5. Tin plate is down $2. The recent upturn in steel demand should have a steadying effect upon prices but considerable time and heavier buying would be required to advance quotations to last year's levels.

The low level of scrap prices as compared with last year, on the other hand, will tend to reduce production costs. Heavy melting steel scrap currently is selling from $2 to nearly $4 a ton less than a year ago in the various districts. Improvements in manufacturing processes, which contributed materially to profits of recent years, will continue as strong factors in cost reduction.

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X-ray Laboratory Moved Into Power Plant for Inspection of Fittings. Page 73.

European Merger News Is Important

IMPORTANT events are occurring in the European iron and steel industry, likely in time to affect American export business. It seems the Europeans also perceive advantages in mergers, and they go a step farther over there and unite their selling agencies to control prices. The result is that the European iron and steel industry and its sales policy, especially in foreign fields, are coming under centralized control. Mergers dominate the news reports from England and Germany; now the Belgian steelmakers have pooled their selling interests, and the way is paved for an imposing expansion of the European steel entente, possibly to control an annual steel output of 36,000,000 tons. IRON TRADE REVIEW'S *staff of European correspondents is recording these developments from week to week. The articles on pages* 131, 132 *and* 133 *this week are especially significant.*

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The Business Trend

Business Continues Moderate Upward Trend

FEBRUARY opens with business continuing its upward trend. Gains are spotty, however. In the steel industry improvement this month is not likely to be as marked or as spectacular as in January.

EARNINGS of steel companies for the final quarter of 1929 and for the year were better than expected. They helped to give the stock market a strong upturn last week. The United State Steel Corp.'s earnings, dropping to $15,951,902 in December, testified to the sharpness of business recession but were at a rate, nevertheless, to cover dividends and add substantially to surplus.

UNDERLYING business conditions unquestionably continue to strengthen. Most of the December reports, with their bad news and depressing influence, now are out. Industrial statistics for January and February promise to be more encouraging.

BUSINESS definitely turned the corner in January if pig iron production, one of the most basic industrial barometers, is accepted as a true index. Sixteen blast furnaces were added to the active list during the month. This is the first increase in eight months.

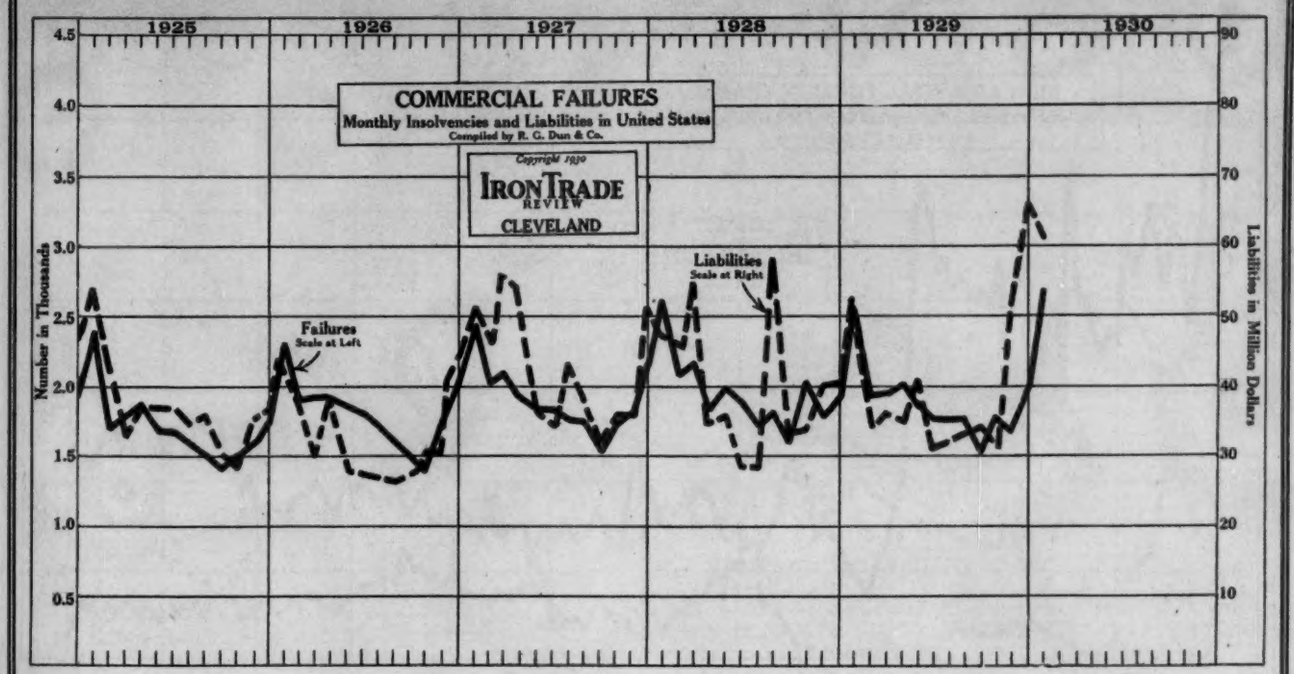
PERSISTENT weakness in commodity prices is becoming a disturbing influence in the business situation. Wheat, cotton, wool, rubber, iron and steel products and many other commodities are under pressure. It is possible to have good business and reasonable prosperity in periods of declining prices, however, as was demonstrated in 1926.

MUCH cheerfulness emanates from the automotive industry, a key industry which still puts the IF into most business forecasts. January output now estimated at nearly 300,000 cars and trucks, was about 140 per cent greater than for December but about 100,000 below the January, 1929, total.

AUTOMOBILE producers in February probably will accumulate stocks for prospective spring demand but perhaps with more caution than their public statements indicate. Machine shops working on specifications for motor plants are not especially active.

EMPLOYMENT is rising gradually. Credit continues easy, commercial loans are being further reduced and banking conditions are improving. The federal reserve system's cash ratio jumped last week from 76.3 to 78.3 per cent.

The Business Trend

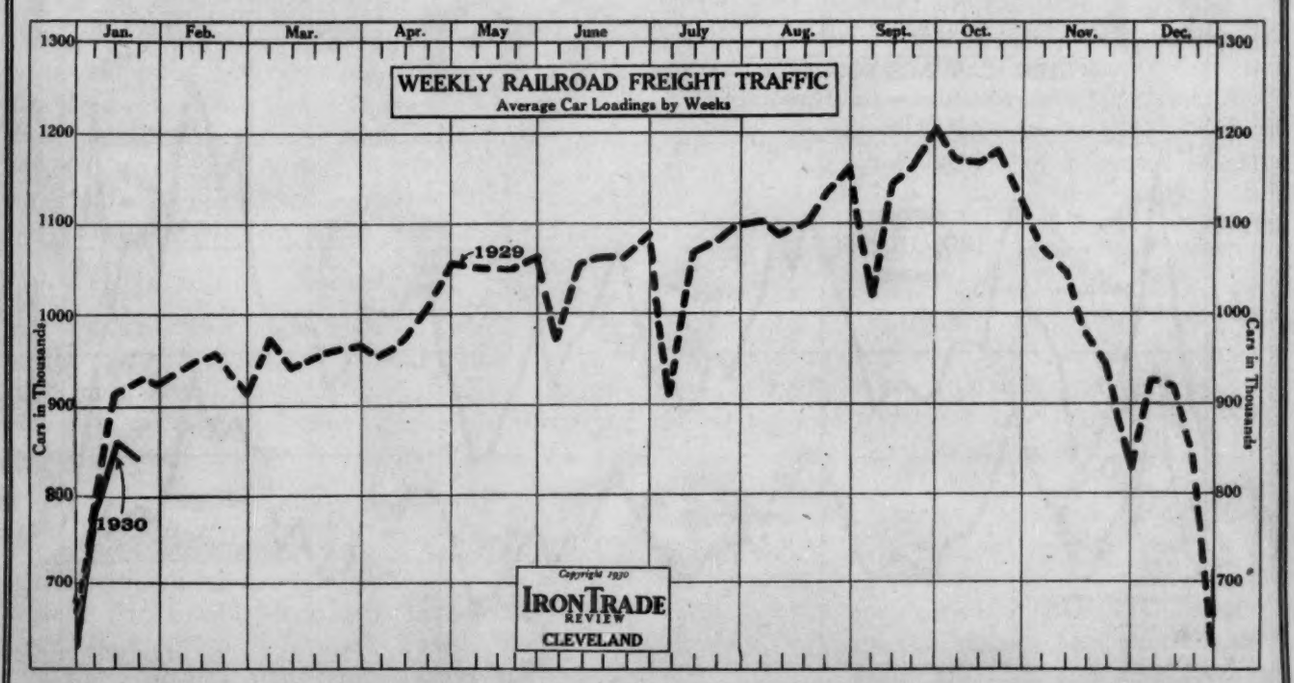


Business Failures

COMMERCIAL failures during the past month were the highest for any January on record and exceeded the total for any month in recent years, according to the compilation of R. G. Dun & Co. January defaults numbered 2759 against 2037 in December and 2535 in January, 1928. Liabilities in December, totaling $61,185,171, were lower than in the previous month when they amounted to $67,465,114, but were above the seasonal average. Liabilities in January, 1929, totaled $47,634,411.

Car Loadings

LOADINGS of revenue freight have increased slightly from the low year-end levels but continue below those of both one and two years ago. Loadings for the week ended Jan. 18 totaled 847,353 cars compared with 863,191 cars in the preceeding week, 931,861 cars for the corresponding week of 1929 and 884,683 cars for the corresponding week of 1928. All districts reported to the American Railway association that loadings of all commodities were lower than one year ago.



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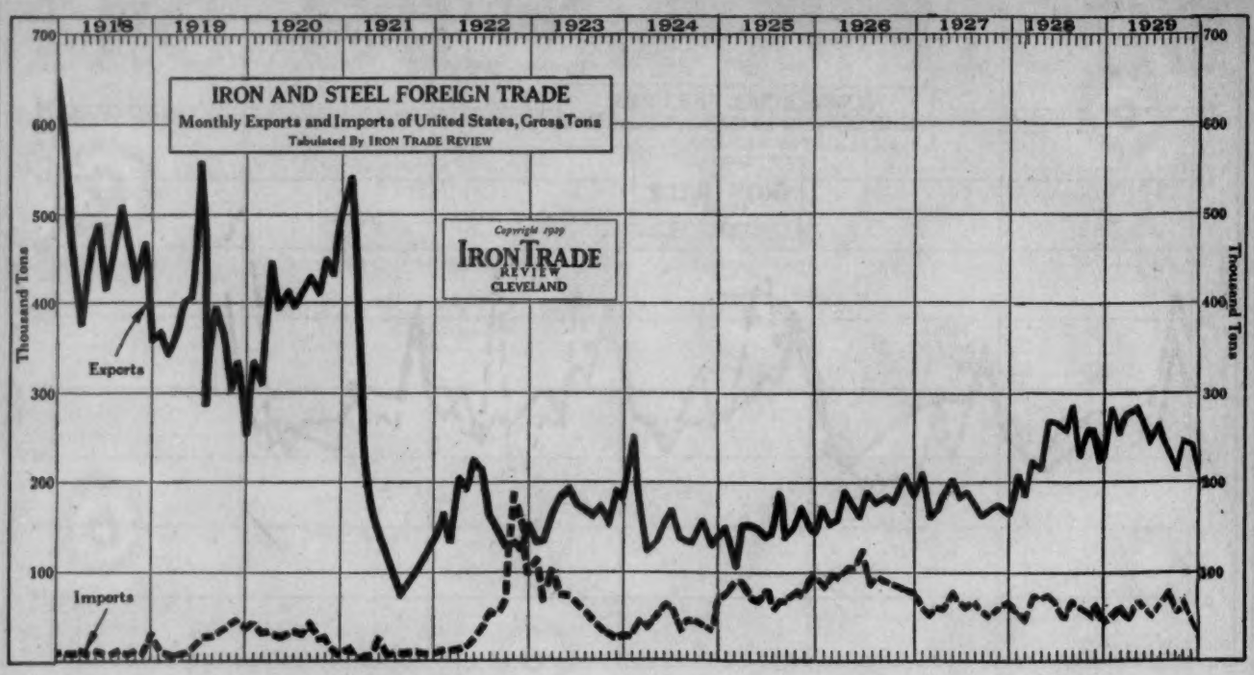
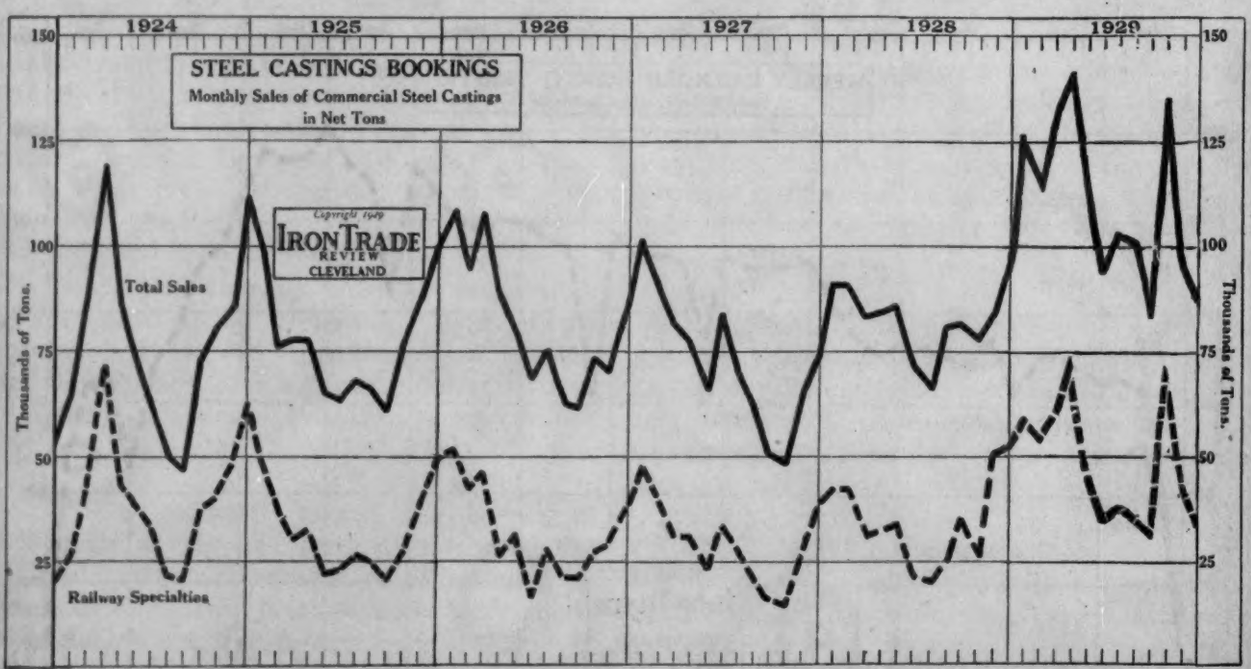


Steel Foreign Trade

EXPORTS of iron and steel products, although showing declines for November and December, nevertheless amounted to 3,032,352 tons for 1929, exceeding those of any year since 1920. Compared with 1928 this was a gain of 5.8 per cent. December exports totaled 215,242 tons compared with 241,829 tons in November and 221,810 tons in December, 1928. December imports amounted to 47,486 tons, against 54,041 tons in November. Imports in 1929 totaled 738,919 tons, or 43,668 tons less than in 1928.

Steel Castings

HEAVY buying by the railroads contributed to record business for makers of steel castings last year. Bookings were 30 per cent greater than in 1928. The year-end decline brought December orders to 85,940 tons, the department of commerce reports. This was the lowest in 14 months, comparing with 97,001 tons in November and 96,373 tons in December, 1928. Bookings of railway specialties in December, 1929, totaled 33,615 tons against 41,763 tons in November and 43,929 tons in December, 1928.



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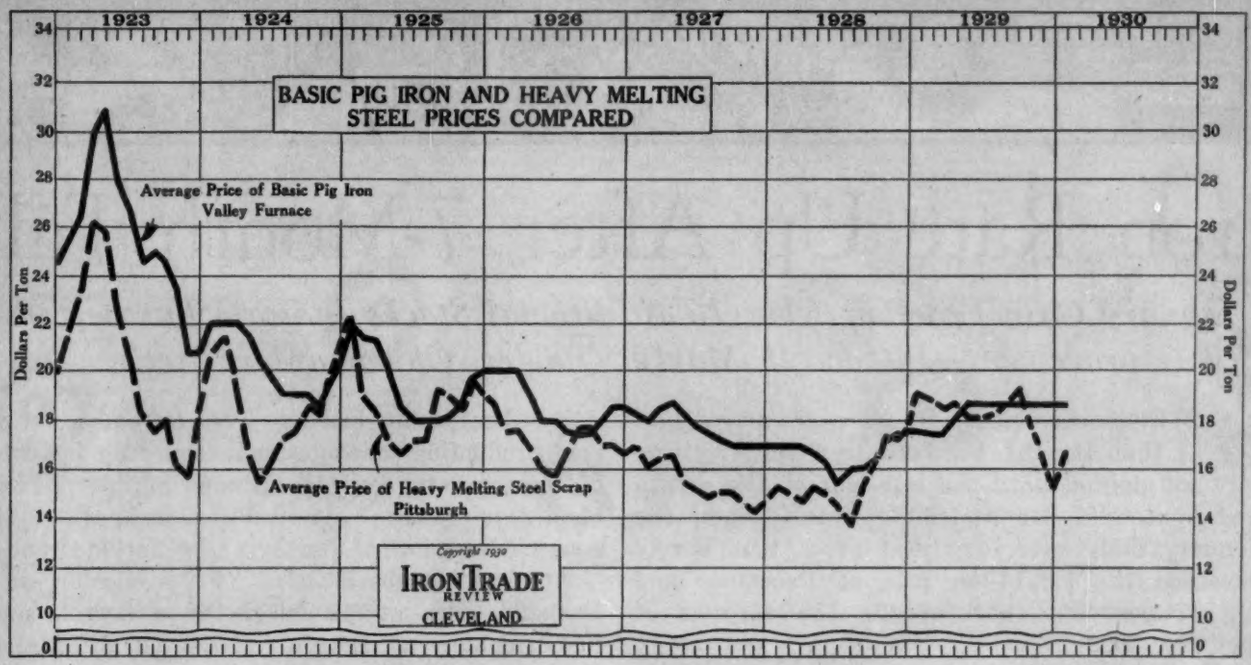
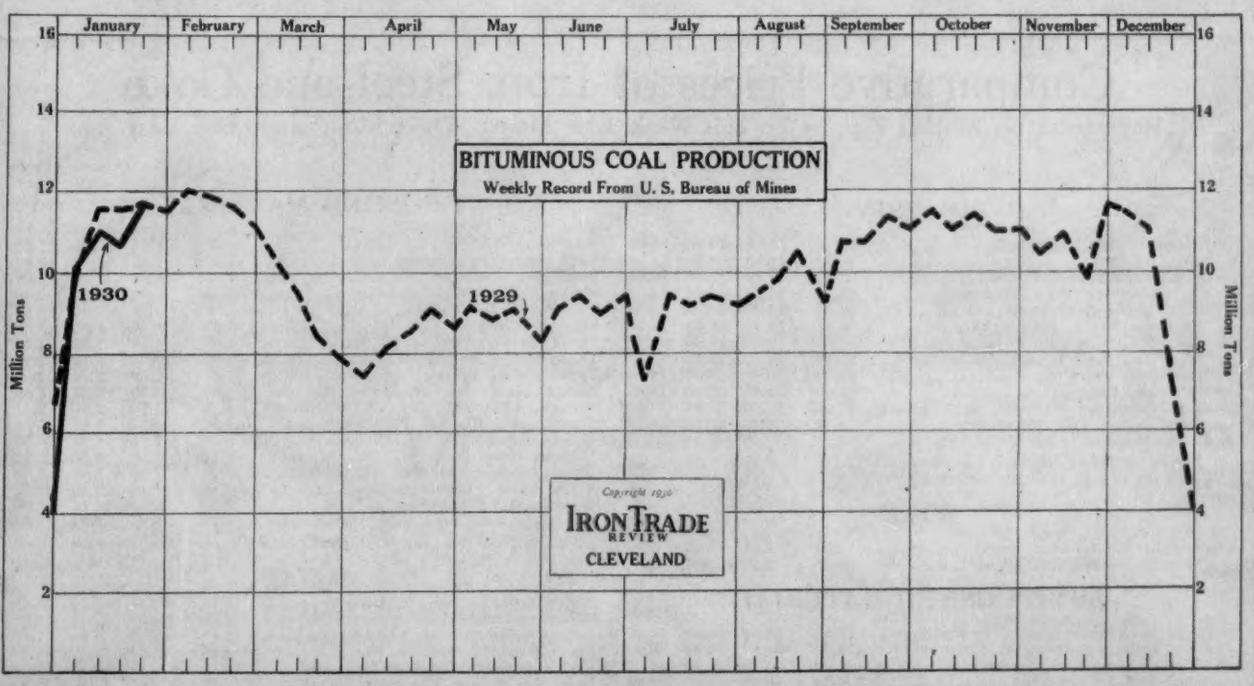


Steel Scrap Prices

FOR nine consecutive months the quotation on basic pig iron has held steadily at $18.50, valley furnace. Iron and steel scrap markets during this period have fluctuated sharply. Heavy melting steel, which averaged $19 at Pittsburgh for January, 1929, was down to an average of $15 in December and in January, 1930, advanced to $16.75. The spread between basic iron and heavy melting scrap quotations now is so wide as to suggest a further narrowing of this price gap in coming weeks.

Bituminous Coal Output

BITUMINOUS coal production continues seasonally high. Output as reported by the bureau of mines, department of commerce, totaled 11,686,000 tons during the week ended Jan. 11 compared with 10,667,000 tons in the previous week and with 11,771,000 tons in the corresponding week of last year. The increase for the week was equivalent to 9.6 per cent. Output for the coal year to date, which starts April 1, is slightly greater than last year. Stocks are not heavy, despite reduced consumption.



Iron Rate Up After 7-Month Fall

January Gain Fractional but 16 Additional Stacks Indicate Further Improvement—Pittsburgh Market Quieter, Chicago More Active

SIXTEEN more blast furnaces were active Jan. 31 than Dec. 31, but because a majority was not lighted until the last half of the month and hence did not contribute a full quota, the January daily rate of 91,565 gross tons barely exceeded the 91,513-ton rate of December and fell 17 per cent short of the 110,742 tons of January, 1929.

January a 97 Per Cent Iron Month

The increase, while fractional, was adequate to stem the decline in pig iron production which set in last June, and was largely made possible by the improved situation in Pennsylvania and Ohio. Compared with the average of the past ten Januaries, last month rates 97 per cent. The month's output was 2,838,543 tons, compared with 2,836,917 tons in December and 3,433,028 tons last January. At the close of the month 172 stacks of the country's 314 were in blast.

Because of the greater flexibility of steelmaking equipment, statistics on steel ingot production in January, available next week, are expected to reveal a heartening increase over December. Current production schedules, a trustworthy indicator of the markets, denote continued improvement in steel requirements save at Pittsburgh, where the consecutive gains of January have flattened out.

Automotive specifications in particular were less substantial at Pittsburgh the past week, some body makers at Detroit having curtailed their February schedules. Line pipe buying still lags, and the gap between fall and spring outdoor construction has not quite been bridged. There is, however, no lack of confidence in the long pull and Chicago, with its customary large first-half year railroad track and equipment programs, is expected to supply the momentum to maintain the upswing until Pittsburgh recovers.

Hold Prices To First Quarter

Prices are nearer stabilization. Pig iron has passed the period when the bulk of first-quarter tonnage has been covered, as evidenced by a decline in sales this week, and prices generally are unchanged. Coke is up and scrap is stationary.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Feb. 5, 1930	Jan. 1930	Nov. 1929	Feb. 1929
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.76	20.76	19.86
Basic, valley	18.50	18.50	18.50	17.50
Basic, eastern, del. eastern Pa.	19.00	19.20	19.75	20.50
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	19.26
No. 2 foundry, Chicago	20.00	20.00	20.00	20.00
*Southern No. 2, Birmingham	15.00	14.70	14.00	16.50
**No. 2X, Virginia Furnace	18.25	18.25	18.25	21.25
**No. 2X, Eastern del. Philadelphia	21.26	21.56	22.26	22.01
Malleable, valley	19.00	19.00	19.00	18.00
Malleable, Chicago	20.00	20.00	20.00	20.00
Lake Superior, charcoal, del. Chicago	27.04	27.04	27.04	27.04
†Gray forge, del. Pittsburgh	19.13	19.13	19.13	18.76
Ferromanganese, del. Pittsburgh	104.79	104.79	109.79	109.79
COKE				
Connellsville furnace, ovens	2.60	2.55	2.65	2.90
Connellsville foundry, ovens	3.50	3.50	3.55	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	33.00	33.80	35.00	34.25
Sheet bars, open-hearth, Pittsburgh	33.00	33.80	35.00	34.25
Billets, open-hearth, Pittsburgh	33.00	33.80	35.00	33.25
Wire rods, Pittsburgh	40.00	40.00	40.00	42.00

*1.75 to 2.25 silicon. For local delivery, Northern shipments based on $13 to $14, Birmingham. **2.25 to 2.75 silicon.

	Feb. 5, 1930	Jan. 1930	Nov. 1929	Feb. 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.85	1.90	1.90	1.90
Steel bars, Chicago	1.95	2.00	2.00	2.00
Steel bars, Philadelphia	2.17	2.17	2.22	2.27
Iron bars, Chicago	1.95	2.00	2.00	2.05
Shapes, Pittsburgh	1.85	1.90	1.90	1.90
Shapes, Philadelphia	1.86	1.91	1.96	2.01
Shapes, Chicago	1.95	2.00	2.00	2.00
Tank plates, Pittsburgh	1.85	1.90	1.90	1.90
Tank plates, Philadelphia	2.00	2.05	2.10	2.10
Tank plates, Chicago	1.95	2.00	2.00	2.00
Sheets, black, No. 24, Pittsburgh	2.65	2.70	2.75	2.85
*Sheets, blue anl., No. 13, Pittsburgh	2.25	2.30	2.35	2.10
Sheets, gal., No. 24, Pittsburgh	3.30	3.35	3.45	3.60
Sheets, black, No. 24, Chicago	2.80	2.90	2.95	3.00
*Sheets, blue anl., No. 13, Chicago	2.50	2.50	2.50	2.25
Sheets, galvanized, No. 24, Chicago	3.55	3.55	3.65	3.75
Plain wire, Pittsburgh	2.40	2.40	2.40	2.50
Wire nails, Pittsburgh	2.30	2.35	2.40	2.65
Tin plate, per base box, Pittsburgh	5.25	5.25	5.35	5.35
SCRAP				
Heavy melting steel, Pittsburgh	16.75	16.55	16.30	18.60
Heavy melting steel, eastern Pa.	14.50	14.50	15.13	16.30
Heavy melting steel, Chicago	13.00	12.65	13.05	16.00
No. 1 wrought, eastern Pa.	15.25	15.25	16.25	16.25
No. 1 wrought, Chicago	13.75	13.40	13.85	15.75
Rails for rolling, Chicago	14.75	14.65	15.30	17.50

*Comparison for January, 1929, is with old blue annealed base, No. 10.

Current Prices for Rolled Steel Products

STEEL PLATES

Pittsburgh, base	1.80c to 1.85c
Philadelphia, del.	2.00c to 2.10c
New York, del.	2.075c to 2.175c
Boston, del.	2.265c to 2.415c
Chicago, base	1.95c to 2.00c
Cleveland, delivered	2.04c
Lackawanna, N. Y., base	2.05c to 2.15c
Birmingham, base	2.00c to 2.05c
Contesville, Pa., base	2.00c to 2.05c
Pacific Coast, c.i.f.	2.30c
St. Louis, del.	2.17c
Detroit, del.	2.14c

STRUCTURAL SHAPES

Pittsburgh, base	1.80c to 1.85c
Philadelphia, del.	1.86c to 1.96c
New York, del	2.045c to 2.145c
Boston, del.	2.265c
Chicago, base	1.95c to 2.00c
Cleveland, delivered	2.04c
Lackawanna, N. Y.	2.05c to 2.15c
Birmingham, base	2.00c to 2.05c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	2.14c

BARS

SOFT STEEL

Pittsburgh, base	1.80c to 1.90c
Chicago, base	1.95c to 2.00c
Birmingham, base	2.00c to 2.05c
Lackawanna, N. Y., base	2.00c to 2.05c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.85c
Cleveland, del., outside mills	1.875c
Philadelphia, del.	2.17c to 2.22c
New York, delivered	2.19c to 2.24c
Boston, delivered	2.265c
Detroit, del.	2.085c
Pittsburgh, cold finishing	1.90c to 2.00c
Pittsburgh, forging quality	2.05c to 2.15c

RAIL STEEL

Chicago Heights	1.85c to 1.90c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	1.95c to 2.00c
New York, delivered	2.19c
Philadelphia, delivered	2.17c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.20c
Stock lengths from mill	1.95c
Chicago, billet, 30 tons and over	2.00c
Under 30 tons	2.40c
Chicago, rail steel	1.80c to 1.85c
Road and bridge work	1.90c to 2.00c
Philadelphia, cut lengths	2.42c to 2.62c

CORROSION, HEAT RESISTANT ALLOYS

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets....35.00c; plates....31.00c.; bars....28.00c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30% inc.

SHEETS

SHEET MILL BLACK, NO. 24

Pittsburgh, base	2.55c to 2.75c
Detroit, delivered	2.84c to 2.94c
Philadelphia, delivered	2.97c to 3.07c
Gary, Indiana Harbor	2.75c to 2.80c
Chicago, delivered	2.80c to 2.85c
Birmingham, base	2.90c
St. Louis, del.	3.17c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.90c to 3.00c
Gary, base	3.00c to 3.10c

GALVANIZED NO. 24

Pittsburgh, base	3.30c
Philadelphia, delivered	3.62c to 3.72c
Gary, Indiana Harbor	3.50c
Chicago, delivered	3.55c
Birmingham, base	3.45c to 3.50c
St. Louis, del.	3.72c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.25c
Chicago, district mills	2.45c
Chicago, delivered	2.50c
St. Louis, delivered	2.67c
Philadelphia, delivered	2.57c
Birmingham	2.45c to 2.50c

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base	2.10c
Chicago district mills	2.30c
Chicago, delivered	2.35c
Philadelphia, delivered	2.42c
St. Louis, delivered	2.52c
Birmingham	2.30c to 2.35c

AUTOMOBILE, NO. 20

Pittsburgh, base	3.90c
Detroit, delivered	4.09c to 4.19c

FURNITURE

Pittsburgh	3.90c to 4.00c

(Turn to the following page)

Concessions in finished steel still are evoked by attractive specifications for immediate rolling, but producers, especially of the flat-rolled lines, are loath to commit themselves beyond this quarter. Heavy finished steel appears pegged at 1.85c, Pittsburgh.

Close to 16,000 freight cars near placement, including 11,350 for the Chesapeake & Ohio and allied lines, 2000 for the Seaboard Air Line and 1800 for the Norfolk & Western, requiring upward of 175,000 tons of steel. New York Central is reported a prospective buyer of 5000 cars, while lists from the Erie and Nickel Plate may total 7000. The Canton Tank Car Co. has bought 1000 tank cars, with miscellaneous awards this week totaling 222. Over 25,000 tons of track fastenings was placed at Chicago.

Chicago Talks of Spring Congestion

An expansion of specifications for bars to a level not far under the high of 1929 has compelled Chicago mills to extend deliveries and discuss the possibility of congestion. Wire sales in all districts last month topped December by a fair margin. Slight improvement in the strip situation is attributed to automotive buyers who, however, are less conspicuous in the sheet market. Municipalities are steadily broadening their participation in cast iron pipe sales. The week's structural awards total 48,000 tons, compared with 44,063 tons last week and 39,980 tons a year ago. Only Pittsburgh, at 70-75 per cent, fails to report higher operations this week. Chicago has advanced to 85 per cent; two banked steelworks blast furnaces have been lighted, making 26 of 36 steelworks and five of six merchant furnaces active. Independent mills at Youngstown are at 80 per cent, and Corporation mills at 70. Thirty-two of 37 at Buffalo are operating. Steel corporation subsidiaries, at 75 per cent last week, are now up to 80 per cent. A year ago the corporation was at 88 per cent. Independent plants this week average 73 per cent, against 70 last week and 83 a year ago.

Believe Financing Will Help Pipe

Line pipe producers are hopeful that easier money conditions will release some large projects held up by difficulty in financing.

British producers of iron and steel, apprehensive of intensified competition as continental makers perfect their associations and price-fixing agreements, are attempting to improve their position by consolidating, or rationalizing. A number of uneconomic plants are being abandoned. Unskilled British steelworks labor is being advanced 24 cents to $1.21 weekly. European iron and steel markets are dull, with export demand smaller.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (February 5, 1930)	$35.24
Last week (January 29, 1930)	35.24
One month ago (January, 1930)	35.56
Three months ago (November, 1929)	36.03
One year ago (February, 1929)	36.28
Ten years ago (February, 1920)	65.63
Fifteen years ago (February, 1915)	22.21

Signifying stabilization of prices nears, the IRON TRADE REVIEW composite of 14 leading iron and steel products is stationary this week at $35.24 for the first time since early December. The average for January was $35.56.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted on Last Editorial Page—See Preceding Page For Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	1.90c
Delivered Detroit	2.19c
Hot strip 6 1/4 to 24-in., Pitts.	1.80c
Delivered Detroit	2.09c
Hot strip, bands 6 in. and under, Chicago	2.00c
Do. 6 1/4 to 24	1.90c
Cooperage stocks, Pittsburgh	2.10c
Do, Chicago	2.30c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 tons and over)	2.65c to 2.70c
Delivered, Detroit	2.885c
Worcester, Mass. (3 tons and over)	2.80c to 2.90c

ALLOY STEEL

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differentials	Net 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 125-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds, squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same prices per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ in. x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Bars, drawn or rolled, Pitts., Chi., Buffalo, and Cleve. c.l.	2.10c
Do, delivered, Detroit	2.335c
Shafting (turned, polished) Pittsburgh, Buffalo	2.10c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.45c to 2.90c

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland base

(Per 100 pound keg)

	Trade	Jobbers
Standard wire nails	$2.40	$2.30
Cement coated nails	2.40	2.30
Galvanized nails	4.40	4.30
(Per pound)		
Polished staples	2.85c	2.75c
Galvanized staples	3.10c	3.00c
Barbed wire, galvanized	3.05c	2.95c
Annealed fence wire	2.55c	2.45c
Galvanized wire	3.00c	2.90c

Anderson, Ind., $1 higher. Chicago $2 higher, Duluth, Birmingham $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Bright plain wire, 6 to 9 gage	2.40c
Spring wire	3.40c
Wire, delivered Detroit	2.535c
Nails, delivered Detroit	2.535c

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland base on products made there; Duluth $2 higher; Fairfield, Ala., $3 higher.

CUT NAILS, CHAIN, PILING

Cut nails, c.l., f.o.b. mills	2.70c
Cut nails, l.c.l., f.o.b. mills	2.80c
Sheet piling, base, Pittsburgh	2.20c

Chain proof BB and BBB, Pitts.

3/16-in. to ½-in.	33 1/3 and 5 off
9/16-in. to 1½-in.	33 1/3 off

CAST IRON WATER PIPE

Class B Pipe—Per Net Ton

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, New York	38.50 to 40.50
Four-inch, New York	41.50 to 42.50
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN PLATE; TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.25
Gary, Ind., base 10 cents higher.	
Long ternes, primes, No. 24	3.90c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, l.c.l., Chicago dist.	$6.80 to 6.90 off
Wrought, c.l., Chicago	$7.00 to 7.10 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$25.00 to 29.00
Light rails, 25 to 45, mills	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, mills	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, mills	$41.50

BOLTS AND NUTS

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927. Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	60 to 70 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.	
Eagle list	60 to 70 off

MACHINE BOLTS

All sizes, cut thread	60 to 70 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.	
Lag screws	60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads	60 to 70 off
Tap bolts	60 to 70 off
Blank bolts	60 to 70 off
Stud bolts without nuts	60 to 70 off
Stove bolts, 75, 20, 10 and 5 off in pkgs., 75, 20, 10 and 5 with 2½ off in bulk.	
Tire bolts	60-5 off

Nuts

Semifinished	60 to 70 off

HEXAGON CAP SCREWS

Milled	80-10-5 off
Upset 1 in. diam. and smaller	85 off

SQUARE HEAD SET SCREWS

Milled	80-5 off
Upset 1 in. diam. and smaller	80-10-5 off

RIVETS

Struc., c.l., Pitts.-Cleve.	3.10c
Structural, c.l., Chicago	3.20c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED STEEL

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$33.00
Pittsburgh, bessemer	33.00
Youngstown	33.00
Cleveland	33.00
Philadelphia	39.30
Chicago	35.00
Forging, Chicago	40.00
Forging, Pittsburgh	39.00
Forging, Philadelphia	44.30

SHEET BARS

Pittsburgh	$33.00
Youngstown	33.00
Cleveland	33.00
Chicago	35.00

SLABS

Pitts., Young.	$33.00
Cleveland	33.00

WIRE RODS

Pittsburgh, Cleveland	$40.00
Chicago	41.00
Youngstown	40.00

SKELP

All grades, Pittsburgh	1.85c to 1.90c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%	9.00 to 10.00
Copper-free low phos. 58-65%	nominal

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 10-12% manganese	12.00 to 12.50
North African low phosphorus	12.50
Swedish basic, 65%	10.50
Swedish low phosphorus	12.00
Spanish and North African basic, 50 to 6% (nominal)	11.50 to 12.00
Newfoundland foundry, 55%	nominal
Tungsten future, short ton unit, duty paid	15.25 to 15.50
Chrome ore, 48%, net ton c.if.	$22.50

MANGANESE ORE

Prices, not including duty, are cents per unit; cargo lots.

Caucasian (52-55 per cent)	30 to 32 cents
Indian (48-50 per cent)	30 to 32 cents
Brazilian (46-48 per cent)	29 to 31 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east, tide., gross ton	$21.00

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	$40.00
Domes., Chewelah, Wash., base	22.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	$45.00

Pig Iron

New Orders Are Smaller After a Month of Increases in Sales and Shipments—Chicago Forecasts Gain for February

SALES and shipments of pig iron in January made a substantial gain over those in December. New orders now, however, are comprised mainly of small, spot tonnages and the volume booked during the past week was less than in the week preceding. Cleveland furnaces sold 25,000 tons; St. Louis reports sales of 8000 tons; Buffalo and New York each 5000 tons. January orders for Cleveland furnace interests were 100 to 175 per cent larger than those of the preceding months, while shipments gained 25 to 50 per cent. Chicago furnace interests expect February shipments will be ten to 12 per cent more than those of January. About 75 per cent of normal first quarter merchant output in the Chicago district is under contract. Prices are steadier.

PITTSBURGH, Feb. 4.—Small orders for pig iron increased slightly during the week but forward contracting was lacking. January shipments showed a good increase over December and because of light furnace operations enabled producers to work off some surplus iron. Davison Coke & Iron Co. placed its Sharpsville stack in blast late last week, increasing the number of strictly merchant valley furnaces in operation to four out of seven. Producers continue to quote $18.50, base, valley for No. 2 foundry and basic and $19 for bessemer and malleable.

Boston, Feb. 4.—About 4000 tons of pig iron was sold in this district the past week. Buffalo iron is quoted at $17, furnace, for No. 2 plain and No. 2X. It is reported furnaces east of Buffalo are shading these prices. General Fire Extinguisher Co., Providence, R. I., wants 1000 tons.

New York, Feb. 4.—Pig iron buying continues restricted to small lots, total sales for the week aggregating 5000 tons. Two inquiries for 500 tons are pending. Prices are easier, with Buffalo iron checking back to $16.50 to $17, base. Southern iron is holding at $19, delivered, New York docks. National Radiator Co. has placed 2000 tons of foundry iron. General Electric Co. is inquiring for 200 tons for Schenectady, N. Y.

Buffalo, Feb. 4.—The pig iron market is active for small lots, 5000 tons having been sold here in the past week. Current inquiry is comparable to recent sales. The Buffalo district price holds at $18.50, base, furnace. The $17 price for eastern delivery may be shaded.

Youngstown, O., Feb. 4.—Small tonnages of pig iron continue to be sold mainly for filling-in purposes. Blowing in of two merchant stacks in the Shenango valley has brought the number active to 17, out of 34. Five have been lighted since Jan. 1. No. 2 foundry and basic hold at $18.50, valley, and bessemer and malleable $19.

Cleveland, Feb. 4.—The volume of pig iron sales shows a tendency to diminish following a month of fairly good business. Sales for a leading merchant producer in January were 100 per cent larger than in December, while its shipments increased 50 per cent. Another merchant furnace interest sold 175 per cent more iron last month than in December, while its shipments gained 25 per cent. Local steelworks have taken larger tonnages recently from their blast furnace connections. Not all of the improvement last month was due to demand from the automotive industry, as eastern sales expanded considerably. The current volume of sales shows a tendency to diminish, as Cleveland furnace interests booked 25,000 tons in the past week, compared with 33,000 tons in the week preceding. Inquiries are lighter. Additional sales were made in nearby territory during the week at $18, base, Cleveland furnace, though $18.50 has not disappeared, and for local delivery the price continues $19, base, furnace. The lake furnace price for northern Indiana and Michigan delivery remains $19.50 to $20, base.

Cincinnati, Feb. 4.—An improvement in the melt has increased spot orders for pig iron but lack of tonnage bookings held the total to less than 5000 tons during the past week. The largest lot reported sold was 500 tons to a Dayton, O., melter. A Cambridge City, Ind., melter wants 200 to 400 tons. Sales of southern iron generally are on a basis of $13.50, Birmingham.

Chicago, Feb. 4.—February pig iron shipments are expected to exceed January's by 10 to 12 per cent, based on present instructions. About 75 per cent of normal first quarter merchant iron production is under contract. With one of the six available merchant furnaces out of blast for relining, furnace interests again are shipping more than their production. Northern iron for spot and future requirements is quoted $20, base, Chicago furnace. Nearly half of current sales are for prompt shipment.

St. Louis, Feb. 4.—The last half of January was featured by a perceptible increase in the melt. Purchasing of pig iron was in fair volume for the month, approximately 35,000 tons being placed. Shipments were ahead of the December rate. The majority of large interests are covered for first quarter. Sales during the past week totaled about 8000 tons, mainly malleable grades. Strong competition is reflected in price uncertainty. Reports of sales figuring back to below $13, Birmingham, are current. Northern iron is being shaded in some instances.

Birmingham, Ala., Feb. 4.—Demand for pig iron shows a slight improvement, several companies booking ton-

(*Concluded on Page* 119)

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts., dist. fur.	19.00
*Basic, del., Pitts.	19.63 to 20.13
Basic, del., eastern Pa.	19.00 to 19.50
Basic, Buff. fur. for local del.	18.00
Malleable, valley furnace	19.00
Malleable, Pitts., dist. fur.	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	19.00
Malleable, Chicago furnace	20.00
Malleable, Buff. fur. for local del.	19.00
Malleable, del. eastern Pa.	20.76 to 22.40
Malleable, Granite City fur.	20.00
No. 1 foundry, Chicago furnace	20.50
No. 1X, Eastern del., Phila.	21.76 to 22.26
No. 1X, Buff. fur. for local del.	20.00
No. 2 foundry valley furnace	18.50
No. 2 fdy., Pitts. dist. fur.	19.00
*No. 2 foundry, del. Pittsburgh	19.63 to 20.13
No. 2 plain Buff. fur. for local del.	18.50
No. 2 foundry, Chicago furnace	20.00
No. 2 fdy., Cleve. fur. for local del.	19.00
No. 2 fdy., Granite City	20.00
No. 2 plain, del., Phila.	20.76 to 21.26
No. 2 plain, Virginia furnace	17.75
No. 2 plain, Buffalo, del. Boston	21.91 to 22.41
No. 2, Brooklyn, Buffalo all rail	21.41 to 21.91
No. 2, Newark, N. J., Buff. all rail	19.78 to 20.28
No. 2 Ala., Bir. base, local del.	15.00
No. 2 Tenn., Bir. base, local del.	15.00
No. 2 Tenn., del. Cincinnati	17.69 to 18.19
No. 2 Alabama, del. Cincinnati	17.69 to 18.19
No. 2 Alabama, del. Cleveland	20.51 to 21.01
No. 2 Alabama, del., Chicago	19.51
No. 2 Alabama, del., St. Louis	18.42 to 18.92
No. 2 Ala., Phila., dock dely.	19.25 to 19.75
No. 2 Ala., Balt., dock dely.	19.00 to 19.50
No. 2 Ala., N. Y., dock dely.	19.00
No. 2 Ala., Boston, dock dely.	20.21
No. 2X, Brooklyn, Buffalo all rail	21.91 to 22.41
No. 2X, Newark, Buff. all rail	20.28 to 20.78
No. 2X, eastern, del. Phila.	21.26 to 21.76
No. 2X, fdy., Buff. fur. for loc. del.	19.00
No. 2X, Buffalo, del. Boston	21.91 to 22.91
No. 2X, Virginia furnace	18.25
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburgh	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila	24.76
Low phos., copper bearing fur.	23.00 to 24.00
Charcoal, Superior, del., Chicago	27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63.00c, 76.00c and $1.13 per ton.

CANADIAN PRICES

No. 1 foundry, del. Toronto	$23.60
No. 1 foundry, del. Montreal	25.00
No. 2 foundry, del. Toronto	23.10
No. 2 foundry, del. Montreal	24.50
Malleable, del. Toronto	23.60
Malleable, del. Montreal	25.00
Basic, del. Montreal	23.50

Silvery iron, Jackson county, O., furnace in per cents: 5—$22; 6—$22 to $23; 7—$23 to $24; 8—$24 to $25; 9—$25 to $26; 10—$27 to $28; 11—$29 to $30; 12—$31 to $32; 13—$33 to $34.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$41; 16—$43.50; 17—$46.50.

The Market Section

Coke

Minimum on Beehive Furnace Fuel Moved Up to $2.60—Foundry Demand Improves Moderately

BEEHIVE furnace coke is stronger, the minimum now being $2.60, since accumulations on tracks were cleared up at the recent price of $2.50. Demand for foundry fuel, both beehive and by-product, is moderately heavier than a month ago. Improvement is slow. Foundries generally are carrying light stocks. Sales of heating coke are well sustained and prices are steady.

Pittsburgh, Feb. 4.—Beehive furnace coke is slightly more active in small sales for prompt shipment. Prices show a firmer tone. Recent sales at $2.50 served to absorb accumulations on tracks and producers now are naming $2.60 on new orders. Shipments and sales of foundry coke are slightly heavier than a month ago. Heating coke is fairly active and prices are steady.

Production of coke in the Connellsville region for the week ended Jan. 25 was 29,720 tons, compared with 30,370 tons the preceding week and 63,850 tons in the same period a year ago, according to the *Connellsville Courier*.

Boston, Feb. 4.—Demand for domestic coke is good, but the market for foundry fuel shows little change. Most foundries are carrying light stocks. Prices are unchanged.

New York, Feb. 4.—While prices have shown little change, distress lots of furnace coke are less numerous and an effort is being made to bring production more in line with consumption. Furnace coke is $2.50 to $2.75, New York, with some standard grades higher. Beehive foundry coke is steady at $3.50 to $4.85, Connellsville, and by-product foundry coke at $9 to $9.40, Newark, N. J.; $11, New England; and $9, Philadelphia.

Chicago, Feb. 4.—By-product foundry coke shipments in January show a gain over those of January, 1929. Prices are unchanged.

Buffalo, Feb. 4.—Daily capacity of 2700 tons at the Donner-Hanna Coke Co.'s plant here will be increased 35 per cent with the 51 new ovens to be constructed, as recently announced. The ovens, however, will not be ready for ten months. The current market is steady.

Cincinnati, Feb. 4.—A heavier melt is indicated in specifications for by-product foundry coke. Early February demand is notably larger than that in January. Domestic grades are selling briskly. Prices are steady.

St. Louis, Feb. 4.—Cold weather has accelerated the movement of domestic and industrial coke. Demand for metallurgical coke also is active. Shipments of foundry coke since the middle of January were well ahead of the December average, and tonnages specified for February are fully up to expectations. Prices are firm.

Birmingham, Ala., Feb. 4.—With few exceptions all by-product coke ovens in this district are in operation. Independent producers are shipping practically all of their current output. By-product foundry coke continues $5, base, Birmingham.

Coke Prices

Prices Per Net Ton

Beehive Ovens	
Connellsville furnace	$2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England del.	11.00
St. Louis del.	9.00
Birmingham, ovens	5.00
Indianapolis del.	8.25
Ashland, Ky., ov., Connell. basis	6.50
Portsmouth, O., ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit ovens	9.00
Philadelphia, del.	9.00

Ferroalloys

Specifications Reflect Further Improvement—Ferromanganese Lower

New York, Feb. 4.—Sellers of ferromanganese report continued improvement in specifications, with the quotation now $99 per gross ton, duty paid tidewater. Spiegeleisen also reflects the upward trend in mill operation with domestic material, 19 to 21 per cent, at $34, furnace, subject to differentials on quantities.

Special ferroalloys are feeling the effect of increased steel mill operations, but prices are not changed. Nearly all requirements are covered for 1930. Wolframite is steady at $15.25 to $15.50, a short ton unit, duty paid, and domestic scheelite is $16.50. Chrome ore is quiet but firm, with the 48 per cent grade $22.50, a net ton, c.i.f.

Pittsburgh, Feb. 4.—Further improvement is noted in specifications for ferromanganese. New orders for ferromanganese and ferrosilicon are light. Occasional orders for spiegeleisen are placed, with the market continuing $34 for small lots. Ferromanganese now is $103.79, delivtungsten is quiet at $1.45. Ferroered. Ferrochrome and ferrovanadium are in better demand. Prices are steady.

Bolts, Nuts, Rivets

Specifications Close to Rate Prevailing a Year Ago

NUT AND BOLT PRICES, PAGE 104

Pittsburgh, Feb. 4.—Activity in bolts, nuts and rivets shows further improvement and specifications are only moderately below the rate of a year ago. Jobbers, structural shops and railroads share in the substantial improvement since December. Operations are heavier, with the current rate slightly above 65 per cent. Prices are firm at 60 to 70 off for bolts and nuts, and 3.10c, Pittsburgh, for large rivets.

Philadelphia, Feb. 4.—Oliver Iron & Steel Co. is the low bidder on 75 tons of rivets for reconditioning the battleship PENNSYLVANIA at the Philadelphia navy yard.

Cleveland, Feb. 4.—Formal orders have not yet been received by rivet manufacturers for rivets for Chesapeake & Ohio locomotives ordered at Lima, O. Between 60 and 80 tons is involved. Nut and bolt orders are more numerous from automotive and allied lines as well as railroads. Operations have been up a trifle, now averaging 60 to 70 per cent.

Chicago, Feb. 4.—Shipping orders for bolts, nuts and rivets, which maintained a high level through the last half of January, are well maintained. Automotive orders are increasing at a moderate rate. Western producers are operating at about 70 per cent. Large rivets in carload lots continue unchanged at 3.20c, Chicago.

History records only one ironworks in Russia prior to the reign of Peter the Great. This was established in the reign of the Czar Alexy Michaelovitch, between 1645 and 1676, and was situated about 60 miles from Moscow.

Ferroalloy Prices

(In dollars, except Ferrochrome)

*Ferromanganese, 78 to 82 per cent tidewater, duty paid	$99.00
*Ferromanganese del. Pittsburgh	103.79
Spiegeleisen, 19 to 21 per cent, domestic furnace spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do., less carload	88.50
Do., 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.45 to 1.50
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producer's plant, net ton	160.00
Do., one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Carloads. Differentials apply to large quantities.

*These prices contract, spot $5 higher.

Scrap

Prices Firmer and Small Advances Are Made—Consumption Increases as Season Advances

WHILE current contracting for iron and steel scrap has not increased markedly, heavier melt has released shipments on old orders and cleared the situation. This gives more strength to the market and quotations have been advanced 25 cents to 50 cents on various grades most in demand.

Chicago, Feb. 4.—Following sale of a substantial tonnage of heavy melting steel at $13.50, the range now is $13 to $13.50. Reserves of open-hearth scrap in the hands of steelworks melters have dwindled perceptibly in the past ten days, and with heavier steelworks operations indications point to accelerated consumer buying. Gray iron foundry grades are weak while rolling mill and plate forging scrap are in relatively strong demand. No. 1 railroad wrought, railroad malleable, and some low phos grades have advanced about 25 cents. More activity is shown in iron car wheels, and a firmer price is indicated at $14 to $14.50. Shippers are giving less consideration to bargaining for scrap to be shipped to outside consumer points.

Buffalo, Feb. 4.—The trend of specialties is toward improvement. Steel wheels, knuckles and couplers and short steel rails have sold for at least $18.50. Consumers are paying $12.75 for stove plate, which is reported scarce, and will pay $12.50 or more for short shoveling turnings. Production of machine shop turnings is somewhat larger but prices are

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.50 to 13.00
Boston, dealers	10.50 to 11.00
Boston, No. 2	10.50 to 11.00
Buffalo, No. 1	14.50
Buffalo, No. 2	12.50 to 12.75
Chicago	13.00 to 13.50
Cincinnati, deal.	12.25 to 12.75
Cleveland, No. 1	13.75 to 14.25
Cleveland, No. 2	13.00 to 13.50
Detroit, No. 1 deal.	12.00 to 12.25
Detroit, No. 2 deal.	10.50 to 11.00
East Pa., del. mill	14.50
N. Y. deal R. R.	11.50 to 11.85
N. Y., deal. yd.	8.00 to 8.50
Pittsburgh, No. 1	16.50 to 17.00
St. Louis, No. 1	13.50 to 14.00
Valleys, No. 1	16.00 to 16.50

COMPRESSED SHEETS

Buffalo (dealers)	12.50 to 12.75
Chicago	11.50 to 12.00
Cleveland	12.75 to 13.25
Detroit, dealers	11.75 to 12.25
E. Pa. new mat.	13.00 to 13.50
Pittsburgh	16.00 to 16.50
Valleys	15.50 to 16.00

BUNDLED SHEETS

Buffalo	9.50 to 10.00
Cincinnati, deal.	10.25 to 10.75
Cleveland	10.75 to 11.25
Eastern Pa.	11.50
Pittsburgh	14.50 to 15.00
St. Louis	9.00 to 9.50

SHEET CLIPPINGS LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.00 to 8.50
Detroit, dealers	9.00 to 9.50
St. Louis	9.00 to 9.50

STEEL RAILS, SHORT

Birmingham	13.00 to 14.00
Boston, dealers	9.50 to 10.50
Buffalo	18.25 to 18.75
Chicago (3 feet)	16.50 to 17.00
Chicago, 2 ft and under	18.00 to 18.50
Cincinnati, deal.	17.50 to 18.00
Detroit, dealers	16.00 to 16.50
Pittsburgh (3 ft.)	19.00 to 19.50
Pittsburgh, 2 feet and under	19.50 to 20.00
St. Louis	17.50 to 18.00

STOVE PLATE

Birmingham	11.00 to 12.00
Boston consumers	10.50 to 11.00
Buffalo	12.50 to 12.75
Chicago, net	10.75 to 11.25
Cinn., deal., net	8.75 to 9.25
Detroit, net, deal.	9.00 to 9.50
Eastern Pa.	11.00 to 11.50
N. Y., deal., mill	7.75 to 8.00
St. Louis	12.00 to 12.50

COUPLERS, SPRINGS

Buffalo	18.25 to 18.75
Chicago	15.50 to 16.00
Eastern Pa.	19.50 to 20.00
Pittsburgh	20.50 to 21.00
St. Louis	14.50 to 15.00

ANGLE BARS—STEEL

Chicago	15.00 to 15.50
St. Louis	13.50 to 14.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	18.50 to 19.00
Cleve. billet and bloom crops	17.50 to 18.00
Eastern Pa.	20.00 to 21.00
Pitts. billet and bloom crops	22.00 to 23.00
Pitts. sheet bar crops	21.00 to 21.50

FROGS, SWITCHES, GUARDS

Chicago	14.25 to 14.75
St. Louis	14.00 to 14.50

SHOVELING STEEL

Chicago	13.00 to 13.50
Cleveland	11.00 to 11.50
St. Louis	12.50 to 13.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.00 to 11.00
Boston, dealers	10.50 to 11.00
Buffalo, No. 1	11.50 to 12.00
Buffalo, No. 2	14.00 to 14.50
Chicago, No. 1	13.75 to 14.50
Chicago, No. 2	13.00 to 13.50
Cincinnati, No. 2	12.25 to 12.75
Eastern Pa.	15.00 to 15.50
N. Y., No. 1 deal.	12.00 to 12.50
Pittsburgh, No. 2	16.50 to 17.00
St. Louis, No. 1	12.25 to 12.75
St. Louis, No. 2	12.50 to 13.00

SPECIFICATION PIPE

Boston	9.00 to 9.50
Eastern Pa.	14.00
New York, deal.	9.25 to 9.75

BUSHELING

Buffalo, No. 1	12.75 to 13.25
Chicago, No. 1	11.00 to 11.50
Cinn., No. 1 deal.	10.00 to 10.50
Cinn., No. 2	6.50 to 7.00
Cleveland, No. 1	12.00 to 12.50
Cleveland, No. 2	10.00 to 10.50
Detroit, No. 1 new deal.	11.00 to 11.50
St. Louis, No. 1	9.25 to 9.75
Valleys, new No. 1	15.00 to 15.50

MACHINE SHOP TURNINGS

Birmingham	6.00 to 7.00
Boston, dealers	6.10 to 6.60
Buffalo	9.25 to 9.75
Chicago	7.50 to 8.00
Cincinnati, deal.	8.00 to 8.50
Cleveland	10.00 to 10.50
Detroit	8.00 to 8.50
Eastern Pa.	11.00
New York, deal.	7.00 to 7.50
Pittsburgh	12.00 to 12.50
St. Louis	6.75 to 7.25
Valleys	11.50 to 12.00

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	6.00 to 6.50
Buffalo	11.00 to 11.50
Cincinnati, deal.	8.75 to 9.25
Cleveland	10.50 to 11.00
Detroit, dealers	9.00 to 9.25
Eastern Pa.	11.00
New York, deal.	7.00 to 7.50
Pittsburgh	12.00 to 12.50

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	6.00 to 7.00
Boston, chem.	9.00 to 9.50
Boston, dealers	6.25 to 6.75
Buffalo	11.00 to 11.50
Chicago	10.00 to 10.50
Cincinnati, deal.	8.75 to 9.25
Cleveland	10.50 to 11.00
Detroit, dealers	9.00 to 9.25
Eastern Pa.	11.25
Eastern Pa., chem.	14.50
New York, deal.	7.00 to 7.50
Pittsburgh	12.00 to 12.50
St. Louis	9.00 to 9.50

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	11.00 to 11.50
Chicago, net	11.50 to 12.00
Cincinnati	9.50 to 10.00
Eastern Pa.	11.00 to 11.50
New York, deal.	7.50 to 8.00
St. Louis	11.50 to 12.00

FORGE FLASHINGS

Boston, dealers	9.00 to 9.30
Buffalo	12.50 to 12.75
Cleve. over 10 in.	11.50 to 12.00
Detroit	11.00 to 11.50

FORGE SCRAP

Boston, dealers	8.25 to 8.75
Chicago	17.25 to 17.75
Eastern Pa.	13.50 to 14.00

ARCH BARS AND TRANSOMS

Chicago, net	17.25 to 17.75
St. Louis	21.00 to 21.50

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	13.50 to 14.00
Chicago steelworks	10.50 to 11.00
Cleveland	12.00 to 12.50
Eastern Pa.	13.50
Pittsburgh	14.50 to 15.00
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	17.00 to 17.50
Boston, ship point	16.00 to 16.50
Buffalo	17.50 to 18.00
Chicago	17.65 to 18.20
Eastern Pa.	20.00 to 21.00
Pittsburgh	20.50 to 21.00
St. Louis	19.00 to 19.50

SHAFTING

Boston, ship point	14.00 to 14.50
Chicago	16.50 to 17.10
Eastern Pa.	19.00
New York, deal.	14.00 to 14.50
St. Louis	18.00 to 18.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	11.00 to 12.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.25 to 13.75
Buffalo, steel	18.00 to 18.50
Chicago, iron	14.25 to 14.75
Chi., rolled steel	17.00 to 17.50
Cincinnati	12.00 to 12.50
N. Y., iron, deal.	10.50 to 11.00
Pittsburgh, iron	15.00 to 15.50
Pittsburgh, steel	20.50 to 21.00
St. Louis, iron	14.00 to 14.50
St. Louis, steel	15.50 to 16.00

NO. 1 CAST SCRAP

Birmingham, cup	12.00 to 13.00
Buffalo	14.50 to 15.00
Boston, textile	13.50 to 14.00
Chicago, mach.	15.10 to 15.70
Chicago, railroad	14.30 to 14.85
Chicago, agri.	13.15 to 13.70
Cincinnati, mach. cupolas, gross	18.25 to 18.75
Cleveland, cupola	15.00 to 15.50
Detroit, net, deal.	11.25 to 11.75
East Pa. cupola	15.50 to 16.00
N. Y. cup. deal.	10.85
N. Y., del. local foundries	15.00
Pittsburgh, cupola	14.50 to 15.00
San Fran., del.	13.50 to 14.00
Seattle	14.50 to 14.75
St. L. No. 1 mach.	14.50 to 15.00
St. Louis, No. 1	13.50 to 14.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	10.50 to 11.00
Cleve., breakable	11.50 to 12.00
Detroit, auto, net dealers	12.00 to 13.00
Detroit, break. deal	9.50
Eastern Pa.	14.00
New York, deal.	9.75 to 10.50
Pittsburgh	12.00 to 13.00

MALLEABLE

Boston, railroad	17.00 to 17.50
Buffalo	17.00 to 17.50
Chicago, agri.	13.75 to 14.25
Chicago, railroad	16.50 to 17.00
Cinn., R. R. deal.	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail	17.50 to 18.00
Detroit auto deal.	14.50 to 15.00
St. Louis, rail	13.75 to 14.25

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	13.00 to 14.00
Boston	10.50 to 10.75
Buffalo	14.00 to 14.50
Chicago	14.75 to 15.25
Eastern Pa.	15.50
New York	10.50 to 11.00
St. Louis	14.50 to 15.00

LOCOMOTIVE TIRES

Chicago, cut	18.00 to 18.50
St. Louis, No. 1	14.50 to 15.00

LOW PHOS. PUNCHINGS

Chicago	15.25 to 15.75
Pittsburgh	19.00 to 19.50

holding firm at higher levels recently established.

Boston, Feb. 4.—While there is little business in the scrap market, a generally firmer price range exists. Demand for a few grades has resulted in betterments running to 50 cents a ton. A ship will load for Danzig in the next few days, some 3200 tons, the first export in a month or more. Buying is largely confined to old contracts otherwise.

New York, Feb. 4.—Consuming demand for scrap remains light. Buying by a Bayonne, N. J., user has contributed to a slightly higher dealers' market on stove plate, although the purchaser paid 25 cents a ton less than when last in the market. This grade is now holding at $8.50 to $8.75, New York. Skeleton steel also is a little firmer as a result of buying by a Harrisburg, Pa., consumer. Shipments of No. 1 railroad steel now are moving more freely into Bethlehem, Pa.

Philadelphia, Feb. 4.—A consumer has bought 1000 tons of heavy melting scrap at $14.50. Otherwise current trading in scrap is restricted to small quantities. Bethlehem Steel Co. continues its policy of regulating shipments on contract. Prices are unchanged.

Cleveland, Feb. 4.—Iron and steel scrap continues relatively quiet despite expansion in steel operations. One consumer has released shipments of No. 1 steel but this has not resulted in price strength. Dealers are buying No. 1 steel at about $14 and No. 2 at 50 cents less.

Cincinnati, Feb. 4.—Shipment of iron and steel scrap on contracts continues, but new business is quiet. Recent upturn in some melters' operations has not been reflected in the scrap market because of accumulation during November and December. Quotations continue unchanged.

Detroit, Feb. 4.—Prices are weaker on a number of grades of blast furnace and open-hearth grades, due to lack of heavy buying by consumers and larger tonnage of automobile scrap from increased production in January.

St. Louis, Feb. 4.—While demand for iron and steel scrap continues quiet, the market has a stronger undertone. The chief manifestation of this attitude has been the receipt by railroads of the highest prices on their scrap which they have experienced in a number of weeks. Due to bad weather and a paucity of offerings from all sources, very little material is arriving. Yards are practically stripped of certain grades, and dealers generally are unwilling to sell short.

Birmingham, Ala., Feb. 4.—Slight improvement is reported in old material, heavy melting steel being in better demand. The steels hold prominence. Iron materials are quiet.

Toronto, Ont., Feb. 4.—A stronger demand for iron and steel scrap has appeared. While most buying is in iron grades steel scrap also has improved. Spot business is holding at a satisfactory level, with few future orders. Both Toronto and Montreal dealers have revised their buying price lists downward.

Canadian Scrap

Dealers' Buying Prices

MONTREAL
Per Gross Ton

Iron axles	$19.00
Steel axles	17.00
Car wheels	14.50
Stove plate	12.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	14.00
Iron axles	16.00
Heavy melting steel	9.00
Turnings	7.00
No. 1 mach. cast (net)	15.00
Malleable (net)	11.50

Pittsburgh, Feb. 4.—Scrap continues fairly active without any marked price changes the past week. The tone still is firm. One additional mill entered the market for the first time this year and shipments against old orders to other points are heavier. Occasional small lots of heavy melting are reported placed at $17.25, but on the basis of tonnage transactions, this grade remains quotable $16.50 to $17. Hydraulic pressed sheets are no higher than $16.50, following sales at this figure and offers of additional tonnage at the same price. Heavy cast is stronger with railroad specialties continuing firm.

Semifinished Steel

Shipments Heavier—Sheet Bar Price Revision Now General

SEMIFINISHED STEEL PRICES, PAGE 104

Pittsburgh, Feb. 4.—New business in semifinished steel continues light. Specifications are more active than a month ago. The market for rerolling billets, slabs and sheet bars appears to have settled to $33. Producers continue to quote $39 on forging billets, with wire rods firm at $40 and skelp generally 1.85c.

Philadelphia, Feb. 4.—Demand for billets is fair. Prices are unchanged at $34, Pittsburgh, for rerollers and $39 for forging quality.

Youngstown, O., Feb. 4.—Three additional open hearths have been lighted in this district, 41 active out of 51. Sheet bars and billets are in larger demand, and with slabs are $33, Pittsburgh and Youngstown.

Cleveland, Feb. 5.—Specifications for sheet bars, billets and slabs have increased considerably in the past week, and the leading merchant producer has added two more open hearths to the active list, making 13 of its 14. One is being repaired, otherwise capacity operation would again be attained for the first time since last fall. Specifications in hand are sufficient for 14 days' operation. The price of sheet bars, billets and slabs has been reduced to a flat $33, Cleveland and Youngstown basis, from $33 to $34, as reported last week.

Chicago, Feb. 4.—Shipments of semifinished material are lengthening. Consumers find it difficult to obtain shipments inside of ten days. As sales have been completed for the quarter, quotations are nominal at $35, Chicago, for rerolling billets and sheet bars. Wire rods are $41, Chicago.

Operating Rates

Operations Gaining—General Average 80 Per Cent—Cleveland High

Cleveland—Thirty-two out of 34 open hearths are going. Finishing mills are requiring more semifinished steel. The Massillon, O., district has been expanding steadily in recent weeks and will be about 80 per cent.

Pittsburgh—Ingot production is unchanged at 70 to 75 per cent with schedules of finishing mills generally steady at last week's rates. Sheet production continues at 65 with tin plate off slightly at 65 to 70. Strip mills are a few points higher at 55 to 60, and pipe schedules are unchanged at 40.

Buffalo—Twenty-three of 37 open-hearths are producing. This represents 62 per cent of capacity, with expectations of increase to 65 or 70 by the end of the week.

Youngstown, O.—Independents have increased active open-hearth furnaces to 80 per cent, comparing with 75 last week. Bessemer output is at a slightly lower level. Corporation's steel production is close to 70. Pipe is off at 50, with all bar mills at 75. Sheet and strip mills show gains, while all tin mills are producing at 75. Two new stacks were lighted during the week, making the active blast furnaces 18 out of 34.

Chicago—Average is 85 per cent with bars and plates the same, structural mill production at 75 and rail capacity continuing at 90. Two more blast furnaces have been started making 26 of the 36 active.

Columbia Steel To Build Plant in Chicago

Chicago, Feb. 4.—The Columbia Steel & Shafting Co., Pittsburgh, leading independent producer of cold-finished steel bars and shafting, will erect a plant here for the manufacture of these products, according to reports from authoritative sources. The company also will enlarge its distributive facilities in the Chicago territory through a new warehouse to be erected on a site already selected in the central manufacturing district. This warehouse will be operated by the Edgar T. Ward's Sons Co. division of the Columbia Steel & Shafting Co.

Plans for the new mill are being prepared and construction will start within the next few months. Erection of the new warehouse will be undertaken immediately.

Bars

Heavier Buying Gives Mills Increased Backlogs—Shipments Become Deferred on Some Sizes

BETTER demand for soft steel bars is apparent in all producing centers and mills are accumulating better order books. At Chicago the volume is close to best records of last year and deliveries are being deferred on some sections. Prices are not strong and some low figures are being named. January specifications exceed those of December but are below January, 1929.

BAR PRICES, PAGE 103

Chicago, Feb. 4.—Buyers of bars and other finished products are facing more extended deliveries. Obligations of producers of diversified products are growing heavier, and mills are much less concerned about outside producers booking local tonnage. Contract orders at the close of the month were comparable to the highest weeks of 1929, a leading producer reports, while specifications, including railroad material, rank with the highest three or four weeks of last year. January specifications from most lines exceeded expectations. Bar mills are about 85 per cent engaged, with alloy bar mills operating at about 60 per cent. Shipments in some sizes of bars are extended to three and four weeks. Soft steel bars, at a spread of about $2 a ton over Pittsburgh, are at 1.95c to 2.00c, Chicago, the former being regarded as the base for tonnage differentials.

New York, Feb. 4.—Steel bar volume is moderate, with prices 1.85c to 1.90c, Pittsburgh. Some sellers are endeavoring to adhere rigidly to the outside figure, except in the case of preferred buyers. Deliveries continue two to three weeks.

Pittsburgh, Feb. 4.—The price of soft steel bars is following the trend in plates and shapes, with the market more generally quotable at 1.85c, Pittsburgh. Some tonnage still is being taken at 1.90c, but some contracts at this figure have been revised downward. Prices lower than 1.85c are named only occasionally. Specifications are holding well to the rate of preceding weeks, with increases shown in requirements of some users. January specifications and shipments showed a marked gain over those of December, but failed to equal the activity of a year ago.

Youngstown, O., Feb. 4.—Miscellaneous demand for steel bars has been added to needs of auto parts makers and agricultural implement builders. Bar mills are operating at 75 per cent of capacity. Broadening of demand has strengthened quotations to 1.85c to 1.90c, Pittsburgh.

Cleveland, Feb. 4.—Orders are larger on books of all makers of merchant steel bars. These largely are automotive in character. All buying is in harmony with prompt needs without anticipation of requirements. This means users' stocks are low and mills will quickly feel an influx of orders and operations will be stepped up accordingly. Bars are 1.85c, Cleveland.

Philadelphia, Feb. 4.—Demand has not scored any further gain, but January continues at an improved rate. The market is continuing at 1.85c to 1.90c, Pittsburgh, with an occasionally lower price heard on larger lots.

Continental Shares' Steel Holdings $46,499,000

Continental Shares Inc., Cleveland investment company which played an important part in the $335,000,000 Republic Steel Corp. merger, reports an increase in capitalization and surplus during 1929 from $29,770,334 to $101,969,349. Cyrus S. Eaton is chairman of the Continental Shares, and W. R. Burwell, president. Investments of $46,449,184 in steel securities are revealed, $48,697,716 in public utilities, $11,824,818 in rubber and $6,740,780 in paint companies.

Total income in 1929 was $6,228,612, including $3,297,802 from dividends, $294,005 from interest and $2,636,754 from sales of securities. Total income for the preceding year was $2,212,178. Indicated market value of the company's investments as of Dec. 31, 1929, was $129,750,138, compared with costs of $121,474,116.

Railroads Ask Stay In Mileage Rates

Washington, Feb. 4.—Railroads east of the Mississippi and north of the Ohio and Potomac rivers have petitioned the interstate commerce commission to postpone for 60 days, or until May 20, the effective date of its order in docket No. 17,000, part 6. This is the mileage scale case, in which the commission has decreed that mileage rates shall govern freight rates on practically all iron and steel products. The case was decided last June and the effective date of the order already has been postponed several times.

In 1658 Capt. Thomas Clarke, in company with John Winthrop and others, put in operation an ironworks at New Haven, Conn. This enterprise embraced a blast furnace and a refinery forge.

Plates

Moderate Improvement in Market—Tank Requirements Increased—Price at Chicago Is Easier

IMPROVEMENT in the plate market is noted in the Middle West, miscellaneous requirements stepping up Chicago district mill operations to 85 per cent. A total of 20,000 to 25,000 tons are pending for southwestern tank work. New York reports Shell interests active on several projects. Erie, Pa., is taking bids on 2500 tons of 60-inch steel pipe. The Chicago base price is easier at 1.95c.

PLATE PRICES, PAGE 103

Chicago, Feb. 4.—Miscellaneous plate tonnage and railroad car shop requirements are tending to lengthen deliveries a week to ten days. Plate mill operations are about 85 per cent. One producer has his mill at capacity, and another leading producer, with much more capacity, reports operations approximating last year. Prospective oil refinery work in the Southwest has added about 4000 tons to tankage inquiry, making a total of 20,000 to 25,000 tons outstanding. No bookings are reported from the oil fields and little pipe line work is under way. Plate prices have gravitated to 1.95c, base, Chicago.

New York, Feb. 4.—While some plate sellers report an improvement, others see little change. Prices are firmer at 1.90c to 2.00c, Coatesville. Slight improvement is noted in tank work, with the Shell interests understood to be active on several projects. Erie, Pa., will open bids Feb. 25 on approximately 2500 tons of 60-inch steel pipe.

Pittsburgh, Feb. 4.—Plate specifications are steady but little improvement is noted compared with activity of preceding weeks. Freight car and ship building are taking fair tonnages but large-diameter pipe lines are lacking. No additional awards of river craft are noted although considerable work is under consideration. Plates generally are 1.85c, with 1.80c named in instances on large tonnages.

Cleveland, Feb. 4.—Plate mills are receiving more orders but individual tonnages are small. Consumers' stocks are low. An order for 600 to 800

tons is expected soon from a Lima, O., locomotive builder. The city of Cleveland probably will issue revised specifications on its proposed pipe line. Plates are steady at 1.85c, base, Pittsburgh.

Philadelphia, Feb. 4.—Plate demand retains its recent improvement, eastern mills operating at 50 to 60 per cent. Indications point to considerable new tonnage to be placed soon especially for shipbuilding. Prices are steady.

CONTRACTS PENDING

2500 tons, 60-inch pipe, Erie, Pa.; bids opened Feb. 25.
100 tons (sheet piling) substructure for Lorain-Huron bridge, Cleveland.

Refractories

Sales Increase as Blast Furnace and Steelplant Work Grows

REFRACTORIES PRICES, PAGE 104

Pittsburgh, Feb. 4.—Refractory sales have shown further improvement and January business, in addition to showing a marked improvement over December, compared favorably with January, 1929. Most orders from steel companies have been for blast furnace and stove work, although open hearth relining has shown an increase since Jan. 1. Bethlehem Steel Co. has placed brick for relining four stoves at Johnstown, Pa., and Pittsburgh Crucible Steel Co. is relining a Midland, Pa., stack. Weirton Steel Co. is enlarging one of its blast furnaces and Davison Coke & Iron Co. is engaged in similar work at its Neville Island plant. Pending work includes new construction by the National Tube Co. at McKeesport, Pa., and the Illinois Steel Co. Prices show a slightly firmer tone, but quotations are unchanged at $43 to $46 for first quality fire clay brick, $43 for silica brick and $45 for chrome brick. Magnesite continues $40 for imported material and $22, base, for domestic.

Budd Profits Show Gains; Deny Merger Report

Edward G. Budd, president, Budd Wheel Co., Philadelphia, denies that the Budd company is negotiating a merger with another wheel manufacturer. Net earnings of the Budd Wheel Co. and of the Edward G. Budd Mfg. Co. increased in 1929. The latter reports profits for the year of $2,307,141, after all charges, equivalent after preferred dividends to $1.73 a share on 1,031,352 shares of common stock outstanding as of Dec. 31, 1929.

The Budd Wheel Co.'s earnings, after depreciation charges and federal taxes, amounted to $1,791.009, equivalent after preferred dividends to $1.84 a share on 926,946 common shares outstanding.

Pipe

West, East Afford Contrast—Utilities Disappoint—5037 Tons Bought in California

WESTERN municipalities buy actively but eastern cities are slow. Oakland, Calif., bought 3142 tons and Alhambra, Calif., 1469 tons. New York will buy 8000 tons soon. Utility buying continues moderate. One in New Jersey will take 4000 tons of gas and water pipe. St. Louis Park, Minn., has 59,700 lineal feet 4 to 12-inch up. Prices are firm.

PIPE PRICES, PAGE 104

New York, Feb. 4.—Cast iron pipe prices continue firm with higher than $36, eastern foundry, noted on most business. Inquiry holds fairly brisk, although municipal buying is slow to start. More than 8000 tons will be required by New York, bids to be taken this month. Bids are in on more than 4000 tons for a New Jersey utility buyer, about evenly divided between gas and water pipe. Yonkers, N. Y. will buy 350 tons of 30-inch pipe. Newark, N. J., is inquiring for 215 tons of cement-lined pipe.

Boston, Feb. 4.—Satisfactory private pipe business has developed and prospects for coming weeks are particularly bright. Municipalities are active in investigating market conditions and one utility interest has already closed on its last half requirements. Bids on contracts are higher than they have been. Boston has not yet closed on 3100 tons. Three smaller towns want 100, 350 and 500 tons, respectively. Recent bidding revealed $47.10 to $48.10 for 4-inch, $42.10 to $43.10 for 6 to 12-inch, and $41.10 to $42.10 for larger, with usual $4 differential for class A and gas pipe.

Pittsburgh, Feb. 4.—Specifications for welded and seamless tubular products continue at the slow rate of preceding weeks. Incoming tonnage and shipments during January approximated the December volume and fell below levels of a year ago. Severe weather conditions restrict oil well drilling in the mid-continent field and lack of line pipe business serves to curtail operations in lapwelded pipe. No additional line inquiries are being received for, and awards are deferred on pending projects. Demand for standard pipe is steady but lacks more active building operations. Mechanical tubing and locomotive and boiler tubing show a further slight gain. Prices generally are firm throughout the list.

Youngstown, O., Feb. 4.—Prospects for natural gas and petroleum lines in the Southwest and further west continue to hold out strong hopes for important tonnage later in the spring and early summer. Immediate operating rates of pipe mills, however, only average 50 per cent. The lack of tonnage applies to merchant pipe as well as the heavier tubes. One new line pipe prospect upon which figures are being taken, involves 40 miles of 8-inch.

Cleveland, Feb. 4.—Limited public building work is interfering with the purchase of large amounts of pipe, conduit, tubing, etc. Standard full weight merchant pipe orders come through in single carload lots for the most part from jobbers for stock.

Chicago, Feb. 4.—Moderate buying by public utilities leads in the iron pressure pipe market. Municipal work remains disappointing. No large program can be expected in the Chicago district this spring. Waterworks finances are much depleted because of the tax reassessment situation, which will delay the receipt of tax money until at least June 1. Wauwatosa, Wis., is expected to award 700 tons of 6 to 16-inch pipe to United States Pipe & Foundry Co., low bidder. The inquiry of St. Louis Park, Minn., includes 3600 feet of 4-inch, 8000 feet of 6-inch, 21,500 feet of 8-inch and 26,600 feet of 12-inch class C pipe. It is understood special process pipe will be purchased. Quotations for 6 to 24-inch are reported on the basis of $45.20 to $46.20, delivered, or $37 to $38, base Birmingham.

Birmingham, Ala., Feb. 4.—New pipe lettings and specifications in sight will warrant material increase in pipe production shortly. Shops anticipate an active spring. Winter buying is better than a year ago. All shops share in the orders and centrifugal pipe predominates.

CONTRACTS PLACED

3142 tons, 4 to 16-inch class B and 250, East Bay Municipal Utility district, Oakland, Calif., to United States Pipe & Foundry Co.
1469 tons, 4 to 24-inch class N, 100, 150 and 250 Alhambra, Calif., allocated as follows: 134 tons to United States Pipe & Foundry Co. and 1335 tons to National Cast Iron Pipe Co.
426 tons, 2 to 8-inch class 150, improvement of Villa park, Santa Ana, Calif., to Lee R. Weber.

CONTRACTS PENDING

59,700 lineal feet special process pipe for St. Louis Park, Minn., including 3600 feet 4-inch, 8000 feet 6-inch, 21,500 feet 8-inch and 26,600 feet 12-inch class C; bids Feb. 5.
3000 tons, 4 to 12-inch steel pipe, Allied Power & Light Co., New York; bids being handled through Stevens & Wood, New York.
2000 tons water pipe, 4 to 36-inch, 1500 to 3500 tons, gas pipe 4 to 36-inch and 100 tons of special fittings, for Interstate Equipment Co., Elizabeth, N. J.; bids in.
1693 tons, 2 to 10-inch class B, Downey County Water Works District, Downey, Calif.; American Cast Iron Pipe Co. low bidder.
500 tons, 6 to 16-inch, for Springfield, Mass.;

bids Feb. 10.
500 tons, 8 to 12-inch, Taunton, Mass.; bids Feb. 11.
635 tons, 6-inch class 150, Los Angeles; bids opened.
350 tons, 6 to 12-inch, Quincy, Mass.; bids opened Feb. 3.
350 tons, 30-inch, for Yonkers, N. Y.; taking bids.
215 tons, cement-lined class B, various sizes, for Newark, N. J.; bids Feb. 10.
189 tons, 2 to 8-inch class C improvement Fifth street, San Diego, Calif.; bids Feb. 17.
164 tons, sewer in Sumerland avenue, Southgate, Calif.; bids opened.
100 tons, 8 to 10-inch, Attleboro, Mass.; bids Feb. 7.

Tin Plate

Heavier Specifications Expected Soon —Production Is Slower

TIN PLATE PRICES, PAGE 104

Pittsburgh, Feb. 4.—Tin plate specifications and shipments during January were seasonally heavy and compared favorably with activity a year ago. Tin plate requirements for general line can production showed a moderate improvement over the past month. Heavier specifications are expected shortly, with orders due for April shipments. Little additional tonnage remains to be contracted. The price continues $5.25 per 100-pound base box, Pittsburgh. Tin plate operations are off slightly at 65 to 70 per cent, one producer shutting down several mills because of mechanical troubles.

Bethlehem Takes Over Danville Steel

New York, Feb. 4.—Bethlehem Steel Co. has announced that it has taken over the business and property of the Danville Structural Steel Co. Inc., Danville, Pa. It will conduct its operations as a division of the Bethlehem plant at Steelton, Pa. The Danville plant consists of a rerolling mill having a capacity of approximately 2500 tons a month. It employs about 200 men.

Virginia Reduces Loss

The Virginia Iron, Coal & Coke Co., Roanoke, Va., for the year ended Dec. 31, 1929, reports a net loss of $24,019, after interest, depreciation and depletion charges, but subject to inventory and other annual adjustments. This compares with a net loss of $64,222 in 1928. For the quarter ended Dec. 31 net profit was $15,874 equivalent to 63 cents a share on 25,000 shares of 5 per cent preferred stock, compared with net profit of $34,095, of $1.36 on the preferred, in the corresponding quarter of 1928.

The English were the first to substitute coke for charcoal in smelting operations in the Western world, although coking had been carried on in China long before 1651. The first patent in this connection was granted to Jeremiah Buck.

Sheets

Market Is Quieter and Price Ranges Are Narrowing—Valley Mill Operations Gain Slightly

RECOVERY in the sheet market is slow. Recent gains in sales and shipments are held in some districts while in others the situation does not appear as favorable as a week ago. Pittsburgh reports demand for automotive tonnage still lacking, except for two leading interests. High points of price ranges recently quoted are disappearing. Valley operations have improved slightly.

SHEET PRICES, PAGE 103

Pittsburgh, Feb. 4.—Sheet demand shows little further improvement, holding at the more active rate of recent weeks. Incoming automotive tonnage is slow to expand, and with the exception of the two leading interests requirements are seasonally light. Freight car builders are taking fair tonnages for use on old orders. The bulk of current sheet business continues for prompt needs. The higher figures of ranges formerly quoted on several grades have disappeared. New business generally is taken on the basis of 2.65c for black, 3.30c for galvanized, 2.25c for blue annealed, with blue annealed plates 2.10c. Mills are less disposed to extend the $2 differential on galvanized to jobbers. Operations are unchanged at around 65 per cent.

New York, Feb. 4.—Increasing demand for sheets has stimulated competition with a result prices on galvanized and black sheets are again easier. While 3.40c, Pittsburgh, still applies in some instances, the bulk of galvanized tonnage is being placed at 3.30c. In black sheets 2.65c, Pittsburgh, is the dominating figure. Blue annealed plates and sheets are unchanged at 2.10c and 2.25c, Pittsburgh, respectively.

Philadelphia, Feb. 4.—Black sheets are selling at 2.65c to 2.75c, while those taking high extras are booked as low as 2.55c, base. Galvanized sheets are 3.35c to 3.40c, the tone of the market being easy.

Youngstown, O., Feb. 4.—Valley sheet mills expect second quarter prices will be firmer and higher and are limiting the application of present quotations to March 31. Common black sheets are bringing 2.65c to 2.75c Pittsburgh; blue annealed 2.10c to 2.20c and 2.25c to 2.35c, depending on gage; autobody 3.90c, and galvanized 3.30c to 3.40c. One mill at Niles which had been idle for two weeks has resumed in part. Independent mills here this week are operating at 69 per cent, compared to 61 per cent last week.

Cleveland, Feb. 4.—Sheet tonnage is not developing at the rate anticipated, though the trend is upward. Sellers believe first quarter business will compare favorably with the same period in 1929. Some full finished sheet orders are noted at 3.90c. Metal furniture sheets are 3.90c to 4.00c.

Buffalo, Feb. 4.—Buffalo sheet producers have increased operations to about 70 per cent, due to better demand for automotive sheets. Prices are steady.

Cincinnati, Feb. 4.—Increasing demand for steel furniture and automotive sheets is adding strength to the market, although buying last week failed to reach the mark set during the middle of January. Present prices are not being quoted beyond this quarter, with prediction of an upward trend.

Chicago, Feb. 4.—Sheet mills find it difficult to schedule mill operations further ahead than four to five days. Specifications on lighter gages are slow, while blue annealed tonnage continues to lead. Consumers' shipping orders the first of this week were lower than a week ago. Operations for the district are about 60 to 65 per cent. Black sheets are unchanged at 2.75c to 2.80c, base, Gary and Indiana Harbor, while the mill price for No. 24 galvanized is 3.50c. Mill quotations for blue annealed sheets are unchanged at 2.30c for No. 10 and 2.45c for No. 13 gage.

St. Louis, Feb. 4.—Weather conditions have opposed expansion in demand for sheets, but producers and distributors report moderately satisfactory business. Automotive grades continue to lag. Prices remain unchanged.

Bethlehem Shows Film on Flanged Shapes

Philadelphia, Feb. 4.—The moving picture of the production of wide flange shapes by the Bethlehem Steel Co. received a popular initial showing here tonight at the Bellevue-Stratford hotel. To care for the crowds that could not be admitted the film will be shown again at the Benjamin Franklin hotel, Feb. 17.

Sets Up Building Body

Washington, Feb. 4.—The National Business Survey conference, meeting here recently, set up a permanent committee composed of representatives of 67 key industries in the construction, equipment and building materials field. Fenton D. Turck Jr., vice president of the American Radiator Co., is chairman of the committee. A fund of $500,000 will be raised to carry on a nation wide advertising and educational building campaign.

Structural Shapes

Apartments Active—Also Office Buildings —Building Needs to Be Large This Spring —1.85c, Pittsburgh, Fairly Firm

SPRING building programs are gradually getting under way and a huge amount of structural work is on architects' boards for early letting. Present awards, 1000 tons or more at a time, are growing more numerous and the inquiry rate is well sustained. Eight apartments in New York, just let, involved more than 8000 tons. A 12,000-ton bridge was let at McKees Rocks, Pa. An eastern office building slated for Feb. 6 letting, involves 10,000 tons and one in the West, just let, takes 1000 tons. The East river, New York, subway takes 3000 tons instead of 10,000 as announced last week. A Philadelphia subway, let to Bethlehem, involves 2600 tons of structural and 750 tons of deck girders. Hotel and tower buildings in Chicago will require large tonnages.

STRUCTURAL SHAPE PRICES, PAGE 103

New York, Feb. 4.—Awards are slightly more numerous. Several projects pending for some weeks are about to be closed. A 5000-ton office building was placed. Six apartments just awarded take more than 6000 tons. The 35-story office building, Broadway and Thirty-eighth street, will take almost 10,000 tons. Lump sum figures will be taken Feb. 6. General contract bids have opened on another subway section, 7700 tons. Mills operate near capacity in most instances and fabricating shops, especially the larger ones, are booked well ahead. Prices are fairly steady on moderate tonnages, but some shading is reported on large contracts.

Boston, Feb. 4.—But one structural project was let, 350 tons, an electric lighting plant at Hartford, Conn. Sentiment is better than during the recent past and a number of large jobs are being figured.

Pittsburgh, Feb. 4.—Awards of 12,000 tons for McKees Rocks, Pa., bridge and 2000 tons for an engineering laboratory at East Pittsburgh, Pa., create a more active structural market than has been noted recently. Inquiry is slightly more active. Specifications for plain material are holding well. Shipments of fabricators the past month were heavier than incoming business. The market for plain material generally is 1.85c, Pittsburgh, with 1.80c done on attractive tonnages.

Cleveland, Feb. 4.—Although a large amount of structural work is projected, having reached architects' drawing boards and estimating departments, little is reaching the award stage. All jobs let involve less than 50 tons apiece. Mills report active plain material specifications. The price is firmly held at 1.85c, base, Pittsburgh.

Chicago, Feb. 4.—Structural mill operations have been stepped up to exceed 75 per cent for the district. Railroad material, including light shapes for car shops, comprises much more of the tonnage than building or bridge work. One plain material producer, using his structural mill for rolling rails, is obligated on the latter well into June, and if structural tonnage increases, soon will face an extremely tight delivery position. Two large Chicago building projects are becoming active, the additions to the Morrison hotel and the Tribune tower and numerous smaller projects are reaching the active stage. Much fabricating capacity of the district now is only partially engaged. Indications are that building work in the Chicago district, held back for several months, will materialize within another month. Plain material prices largely are based on 1.95c, Chicago, although 2.00c still is named.

Philadelphia, Feb. 4.—Shape prices continue easy with the general range on plain standard material 1.80c to 1.90c, base, eastern mill. Less is being done on particularly attractive lots. Demand continues good. Eastern mills operate 75 to 85 per cent.

Birmingham, Ala., Feb. 4.—Structural shape shops are active, fabrication being steady and full forces in shops and field being maintained. Contracts in sight call for considerable steel.

CONTRACTS PLACED

12,000 tons, Allegheny county bridge, McKees Rocks, Pa., to Fort Pitt Bridge Works.

5000 tons, office building, Morris West and Washington streets, New York, to unstated fabricator.

3350 tons, including 2600 tons structural and 750 tons deck girders, Eighth street section, Ridge avenue subway, Philadelphia, to Bethlehem Steel Co.

2000 tons, engineering laboratory, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., to American Bridge Co.

1800 tons, office building, Central Illinois Public Service Co., Springfield, Ill., to McClintic-Marshall Co.

1750 tons, office building and club house, Steuben club, Lexington avenue and Fifty-eighth street, New York, to McClintic-Marshall Co.

1600 tons, Tudor City apartment, unit No. 12, East Forty-second street, New York, to Harris Structural Steel Co.

1500 tons, apartment, East Thirty-eighth street, New York, to George A. Just Co.

1500 tons, apartment hotel, Horatio and Greenwich street, New York, to Taylor-Fichter Steel Construction Co.

1500 tons, Floyd Bennett airport hangars, Barren Island, N. Y., to American Bridge Co.

1400 tons, Fort street grade separation work, Detroit, Pere Marquette railroad, Detroit, to American Bridge Co.

1200 tons, apartment, East Ninety-sixth street, New York, to Drier Iron Works.

1200 tons, warehouse, Baker & Williams Co., West Twentieth street, New York, to Levering & Garrigues Co.

1100 tons, apartment, Irving place and East Nineteenth street, New York, to unstated fabricator.

1000 tons, unit No. 2, Hunter College, New York, to Lehigh Structural Steel Co.

1000 tons, office building, 621 South Spring street, Los Angeles, to Consolidated Steel Corp.

800 tons, bridge spans, Northern Pacific railroad, to unstated fabricator.

700 tons, 15-story apartment, 240 East Seventy-second street, New York, to Harris Structural Steel Co.

600 tons, apartment, 44 Gramercy park north, New York, to Paterson Bridge Co.

600 tons, addition, Western Electric Co., Baltimore, to Belmont Iron Works.

575 tons, envelope factory, Lititz, Pa., to A. B. Rote Co.

550 tons, 15-story apartment, Hanson place and South Elliott street, Brooklyn, N. Y., to Berkshire Steel Co.

500 tons, bridgework for St. Louis-Southwestern railroad at Camber, Okla., to Kansas City Structural Steel Co.

460 tons, United States government, airport, Dayton, to Dayton Structural Steel Co.

400 tons, bridge, Indianapolis, for Big Four railroad, to American Bridge Co.

350 tons, electric lighting plant, Hartford, Conn., to Eastern Bridge Co.

335 tons, mine sintering building in Minnesota for Wisconsin Steel Co., to Lakeside Bridge Co.

325 tons, paper mill, Kimberly Paper Co., Kimberly, Wis., to Vulcan Iron Works.

325 tons, American river bridge, Sacramento, Calif., to Palm Iron Works.

300 tons power house, Houston, Tex., to Houston Structural Steel Co., through United Engineers & Constructors Inc.

300 tons, strengthening trestle, Maine Central railroad, Crawford Notch, N. H., to McClintic-Marshall Co.

300 tons, St. Catherine's church and school, St. Albans, Queens, N. Y., to National Bridge Co.

225 tons, turntable, Maine Central railroad, Waterville, Mo., to American Bridge Co.

200 tons, apartment, avenues K and L, Brooklyn, N. Y., to Douglas Iron Works.

200 Ivy street school, Newark, N. J., to Selbachmeyer Co.

184 tons, pipe warehouse for Crane Co., Los Angeles, to Consolidated Steel Corp.

180 tons, Chancellor avenue school, Newark, N. J., to Breen Iron Works.

166 tons, factory in Hollydale, Los Angeles, to Consolidated Steel Corp.

157 tons, state armory addition, New York, to Montgomery Iron & Steel Co.

150 tons, gantry crane, Arden Salt Co., Newark, Calif., to Moore Drydock Co.

150 tons, highway bridges, Clinton county, Iowa, to Clinton Bridge Works.

150 tons, viaduct, Milwaukee Electric Railway

Awards Compared

	Tons
Awards this week	48,082
Awards last week	44,063
Awards two weeks ago	30,020
Awards this week in 1929	39,980
Average weekly awards, 1930	30,235
Average weekly awards, 1929	38,603
Average weekly awards, Jan.	26,666
Total awards to date, 1929	206,519
Total awards to date, 1930	181,412

& Light Co., Ives, Racine, Wis., to Milwaukee Bridge Co.

CONTRACTS PENDING

10,000 tons, 35-story office building, Broadway, Thirty-eighth and Thirty-ninth streets, New York; lump sum figures due Feb. 6, being taken by Fred T. Ley Co.
4400 tons, 22 army hangars, San Antonio, Tex.; bids opened Feb. 11.
3000 tons, subway, route 103, section 4, New York-Brooklyn tunnel under East river; reported last week as 10,000 tons.
1500 tons, United States Marine hospital, San Francisco.
1000 tons, bank and office building, 340 149th street, New York.
450 tons, bridges, Mt. Vernon Memorial highway, District of Columbia and northern Virginia; general contract bids Feb. 20.
300 tons, nurses' home, Caledonian hospital, Brooklyn, N. Y.
200 tons, church and school, Dobbins street, Brooklyn, N. Y.
125 tons, police station, 135th street, New York.
100 tons, sewage disposal plant, Chicago sanitary district, Stickney, Ill.
Unstated tonnage, addition to Morrison hotel, Chicago.
Unstated tonnage, addition to Tribune tower, Chicago.
Unstated tonnage, grade school, Fifth and Fitzwater streets, Philadelphia.
Unstated tonnage, Pennsylvania railroad bridge, Sunbury, Pa.
Unstated tonnage, $1,850,000 addition to government building and postoffice at Milwaukee; bids on general contract close March 5.

December Indexes Show Falling Tendency

Washington, Feb. 4.—December wholesale price index number for iron and steel was 96.3, compared with 96.5 for November and 96.6 for December, 1928, taking 1926 at 100, according to the department of commerce. Structural steel wholesale price number for December was 97, compared with 97 for November and the same figure for December, 1928. December nonferrous metal wholesale price index number was 101.5, compared with 102.4 for November and 98 for December, 1928. Metals and metal products in December had a wholesale price index number of 102.1, compared with 102.3 for November and 102.9 for December, 1928.

Value of Mineral Products Up Nearly 10 Per Cent

Washington, Feb. 4.—Total value of mineral products in the United States in 1929 was approximately $5,900,000,000, as announced by Scott Turner, director, bureau of mines. This is an increase of nearly 10 per cent over the total value of mineral products in 1928. Gain in the value of metallic products is due chiefly to the increase in quantity and unit value of copper and iron produced. Estimated values of mineral products in 1929 are as follows: Metallic, $1,540,000,000; nonmetallic, other than fuels, $1,200,000,000, and mineral fuels, $3,160,000,000.

In 1606 patents were granted in England to Sir Davis Bulmer and Clement Dawbeny, respectively, for cutting iron into nail rods by water power.

Concrete Bars

February Outlook Brighter —Individual Lots Larger— Prices Seem Fairly Firm

AFTER getting away to a poor start, concrete bars promise to gain momentum this month. Individual awards are growing in size and are more numerous. Pending work includes subways in New York; 1600-ton bridge, Rochester, N. Y.; 600-ton sewage disposal plant in Illinois; 1140-ton memorial highway in Virginia. Sheffield Steel Corp. is low on 4500 tons for Oklahoma.

REINFORCING BAR PRICES, PAGE 103

New York, Feb. 4.—While a large volume of concrete bar business remains up for figures, buyers are slow to close. This is especially true of subway work. Large tonnages bring out some price shading, but the market remains nominally 2.54c, New York, on carload mill shipments. New inquiry is fair. Several new jobs are up in northern New Jersey, including 300 tons for a Newark school and 600 tons for a bridge there.

Boston, Feb. 4.—Concrete bar sales totaled 150 tons, comprising a number of odd lots. Three or four projects are directly ahead for early contracting, including the Atlantic Bank building here. Mumirch Bros., St. Louis, general contractors who built the Bedford, Mass., Veterans' hospital a year ago, are low on the Veterans' hospital, Hartford, Conn., 500 tons.

Pittsburgh, Feb. 4.—Concrete reinforcing bars continue seasonally active but awards and inquiries showed little further improvement last week. A 240-ton addition to the Bell Telephone Co. building here was recently placed. Other awards generally involve small lots and inquiry is in a similar volume. Prices are unchanged at 2.20c, Pittsburgh, for cut lengths and 1.95c for stock lengths.

Buffalo, Feb. 4.—An order for 1600 tons of reinforcing bars for the Genesee river bridge at Rochester is expected to be placed immediately after the award of the contract. Action is expected on or shortly after Feb. 5. Two new inquiries of 300 tons each are out, one for a Buffalo school and the other for a new sewer. Prices average 2.265c for carloads, Buffalo, when shipped direct from steelworks.

Chicago, Feb. 4.—Several billet reinforcing bar fabricators today are issuing formal price lists on lots of 30 tons and over. The base price is 2.00c, plus full extras for bending and engineering work. The price quoted for orders under 30 tons is 2.40c. The Chicago sanitary district will take bids soon on about 120 tons of bars for another unit of the sewage disposal plant at Stickney, Ill. Chicago board of education has a school program, but this may be delayed for some time owing to lack of tax funds. Another $450,000 school building is up at Moline, Ill. Rail steel reinforcing bars are 1.80c to 1.85c.

Awards Compared

	Tons
Awards this week	4,114
Awards last week	3,050
Awards two weeks ago	3,328
Awards this week in 1929	5,940
Average weekly awards, 1929	5,849
Average weekly awards, 1930	3,513
Average weekly awards, Jan.	3,393
Total awards to date, 1929	42,380
Total awards to date, 1930	21,076

CONTRACTS PLACED

2300 tons for Reveres des Peres sewer project in St. Louis, to the Kalman Steel Co. Bars to be rolled by Scullin Steel Co., St. Louis.
1000 tons, Wabash-Harrison garage and hotel building, Chicago, to Olney J. Dean Co.; reported Jan. 23 as going to unstated fabricator.
350 tons, Bennett airport, Barren Island, N. Y., to Concrete Steel Co.
265 tons, school, board of education, Cincinnati, to Pollak Steel Co.
254 tons, paving work in Imperial county, Sacramento, Calif., to unnamed interest.
240 tons, addition, Bell Telephone Co. building, Pittsburgh, to Carlem Engineering Co.
200 tons, bridge, Brooklyn-Manhattan Transit Co., New York, to August Bellon Inc.
175 tons, Sixtieth street terminal, New York, New York Central railroad, to Truscon Steel Co.
130 tons, dyeing plant, Mission street, San Francisco, to W. S. Wetenhall Co.
100 tons, grade crossing elimination, Nyack, N. Y., to Truscon Steel Co.
100 tons, factory, West Fortieth street, New York, to Igoe Bros.

CONTRACTS PENDING

4500 tons, 1930 requirements (including mesh) of Oklahoma; A. R. Loch, engineer, state highway commission, Oklahoma City, Okla.; bids closed Feb. 3; Sheffield Steel Corp., Kansas City, Mo., low bidder.
1140 tons, bridges and underpasses, Mt. Vernon Memorial highway, District of Columbia and northern Virginia; bids Feb. 20.
896 tons, Salt river bridge, Phoenix, Ariz.; general contract to Lynch-Cannon Co., Los Angeles.
600 tons, Haynes avenue bridge, Newark, N. J.
500 tons, Veterans' hospital, Hartford, Conn.; Mumich Bros., St. Louis, low on general contract.
300 tons, school, Newark, N. J.
300 tons, school No. 82, Buffalo, bids about Feb. 15.
300 tons, Cornelius creek drain, Buffalo, Frank G. Hanssel, Buffalo, general contractor.
250 tons, state hospital, Pana, Ill.
250 tons, paving work in San Luis Obispo coun-

ty, Sacramento, Calif; bids received.
240 tons, school, Fifth and Fitzwater streets, Philadelphia.
212 tons, new building, Jewish hospital, Cincinnati.
125 tons, bridge, Saddle river, Bergen county, N. J., route 4, section 5.
120 tons, another unit sewage disposal plant, Stickney, Ill.; bids to be asked soon by Chicago sanitary board.
119 tons, paving work in Santa Barbara county, Sacramento, Calif.; bids received.
110 tons, Pennsylvania railroad bridge, Sunbury, Pa.
110 tons, office building, Fell and Polk streets, San Francisco; bids received.
108 tons, bridge in Siskiyou county Sacramento, Calif.; bids Feb. 13.
100 tons, Veterans' hospital, Marion, Ind.
Unstated tonnage, freight house, Manufacturers' Junction Railway Co., Chicago.

Spring Makers Merge

Pittsburgh, Feb. 4.—Fort Pitt Spring Co., and Duer Spring & Mfg. Co., both of McKees Rocks, Pa., have been consolidated with the spring department of the Standard Steel Car Co., Butler, Pa. All are manufacturers of railroad and industrial springs. Present personnels are to be maintained, with plants operated separately. Officers and directors of the Fort Pitt company are to head the new company and heads of the first two companies are to be retained as plant executives.

Banquet for Safety Work

Kokomo, Ind., Feb. 4.—The semiannual safety banquet of the Continental Steel Corp. was held here recently with more than 200 present. Henry Roemer, president, was in charge of the program. W. H. Winans, New York, head of industrial relations department, Union Carbide & Carbon Corp., was the principal speaker. The Continental corporation reduced accidents during the past year.

Wheeling Gets Coke Co.

Portsmouth, O., Feb. 4.—Wheeling Steel Corp., Isaac M. Scott president, announced the purchase of the remaining half interest in the Portsmouth By-Product Coke Co. plant from the American Rolling Mill Co. The Solvay Co.'s coal mines at Freeburn, Ky., are included in the transaction.

Forgers May Merge

Pittsburgh, Feb. 4.—Pittsburgh Forgings Corp. and Transue & Williams Forging Corp. are reported negotiating a merger which would involve assets totaling $10,000,000. No definite announcement confirming the merger has been made yet.

Revise Duty on Shapes

Washington, Feb. 4.—The collector of customs at New York has been ordered by commissioner of customs, F. X. A. Eble, to assess duty on certain so-called steel angles, channels, tees, with less than 3-inch dimension under paragraph 304 of the tariff.

Carlson Forgings Co., 1056 North Kolmar avenue, Chicago, has changed its name to Northern Forgings Co.

Rails, Cars

Car Orders Light—Pending List Augmented—30,000 Tons Fastening and 8500 Tons of Rails Let

INTEREST in railroad cars remains keen because of large pending lists rather than because of orders placed. About 14,000 to be bought in next two weeks will swell February total. Other lists, about to come out, involve a like number. Track fastening tonnage has been unusually heavy, 25,000 to 30,000 tons being distributed. A 1000-tank car order was placed and 31 engines.

RAILROAD TRACK PRICES, PAGE 104

Chicago, Feb. 4.—Track fastenings tonnage of between 25,000 and 30,000 tons was booked by Chicago district mills during the week. Some rail tonnage also has been entered on mill books on orders previously announced. Rail mill capacity is slightly more than 90 per cent engaged, and one mill has its operating schedules lined up to June at a near capacity rate.

Action is expected shortly on steel for 2300 cars for Chicago, Milwaukee, St. Paul & Pacific.

New York, Feb. 4.—Fresh car inquiry continues light although New York Central is expected in the market shortly for 5000 freight cars. Norfolk & Western postpones action until Feb. 10 on 1800 freight cars. Upon closing of 11,350 freight cars later this week by Chesapeake & Ohio and allied roads, Erie and Nickel Plate are expected to ask bids on approximately 7000 freight cars and a number of coaches, of which Erie probably will take 3000 freight cars and 50 coaches. Tank car business again is sizable, 1000 being awarded by the Canton Tank Car Co. Chesapeake & Ohio has just added 15 switching engines to the 65 it awarded American Locomotive Co., as noted last week, making 80 in all.

Pittsburgh, Feb. 4.—January business in track material was seasonally heavy and substantially ahead of December's. Recent awards have been light. Bethlehem Steel Co. received an order for 8500 tons of rails from the Richmond, Fredericksburg & Potomac railroad. Bangor & Aroostook placed 200 steel underframes and superstructures with Pressed Steel Car Co. Miscellaneous business in track fastenings continues fairly active and demand for relaying rail rail shows further improvement during the past several weeks. The market on 60 to 90-pound relaying rails is stronger at $25 to $29, with a slight scarcity reported in the lighter keight material. Light rails generally are $36.

CAR ORDERS PLACED

Anglo-Chilean Consolidated Nitrate Corp., 210 flat cars, to Magor Car Corp.
Bangor & Aroostook, 200 box car underframes and superstructures, to Pressed Steel Car Co.
Canton Tank Car Co., 1000 tank cars, to American Car & Foundry Co.
Manila railroad, six ballast cars, to American Car & Foundry Co.
Pennsylvania, five combination passenger and baggage gasoline-electric rail motor cars, to J. G. Brill Co.
Union Gas & Electric Co., one freight car, to St. Louis Car Co.

LOCOMOTIVE ORDERS PLACED

Chesapeake & Ohio, 15 additional switching engines, to American Locomotive Co., making 80 in all.
Crab Orchard Improvement Co., 16 small electric locomotives, to Westinghouse Electric & Mfg. Co.; mechanical parts to be built by Baldwin Locomotive Works.

RAIL ORDERS PLACED

Richmond, Fredericksburg & Potomac, 8500 tons, to Bethlehem Steel Co.

CAR ORDERS PENDING

Aluminum Co. of America, 25 hopper cars.
Chesapeake & Ohio, 91 miscellaneous coaches; bids open Feb. 25.
Green Bay & Western, 125 box cars.
International Railways of Central America, 85, including 35 stock, 25 box and 25 flat cars.
New York Central, 5000 freight cars; formal inquiry expected shortly.
Norfolk & Western, 1800 freight cars; bids postponed to Feb. 10.
Southern Pacific, 15 electric street cars.

Tennessee Names New Vice Presidents

Birmingham, Ala., Feb. 4.—H. C. Ryding, president of the Tennessee Coal, Iron & Railroad Co., today announced appointments, including three new vice presidents, as follows:

Karl Landgrebe, general superintendent, Ensley steel works, Ensley, Ala., to be vice president in charge of Ensley works, blast furnaces, steel plant and rolling mills, with headquarters at Birmingham; Thomas Chalmers, general superintendent of sheet mill and coke works, to be vice president, with headquarters at Birmingham; C. E. Abbott, vice president in charge of mines and quarries.

Willard Wilson continues as vice president and general manager of sales. Other appointments follow: R. H. Ledbetter, general superintendent of Ensley works, to succeed Mr. Landgrebe; and A. B. Haswell, assistant to vice president in charge of construction.

Pennsylvania exported 274 tons of pig iron to Great Britain in 1728.

The Market Section

Strip

Continued Gain in Orders Is Small—Some Concessions Appear —Automotive Needs Larger

BETTER tonnage in strip steel is coming out in all producing districts, but the gain is slow. Automotive users are giving most of the increase. Some producers have been able to add to their activity as a result. Hot-rolled strip is more active than cold-rolled, in most instances. Prices are unchanged with prevailing quotations usually well maintained.

STRIP PRICES, PAGE 104

Pittsburgh, Feb. 4.—Strip steel specifications the past week show a further slight gain, although the improvement in automotive requirements is spotty and the aggregate is expanding slowly. Some strip producers have increased hot mill operations to as high as 70 per cent, with the average continuing 55 to 60 per cent. Schedules of cold mills continue around 45 per cent. The market is holding at a minimum of 1.90c and 1.80c for the two sizes of hot strip despite reports of some lower figures in the Detroit district on the wider widths. Most cold-rolled tonnage is selling at 2.65c; smaller lots are 2.75c.

New York, Feb. 4.—Hot strip here has settled to a spread of 1.80c to 1.90c, Pittsburgh, depending upon width, with cold-rolled strip 2.65c, Pittsburgh. Buying continues spotty and while sellers report better mill operations, due chiefly to buying in the Middle West, deliveries are unchanged.

Philadelphia, Feb. 4.—Both wide and narrow hot stip is fairly steady at 1.80c and 1.90c, Pittsburgh, with shading restricted to a few special tonnages. Cold strip is 2.65c, Pittsburgh, as a minimum.

Youngstown, O., Feb. 4.—Hot-rolled strip demand gains a little each week, leading to increased rates of operation at both Sharon and Warren mills. Hot rolled strip ranges from 1.80c to 1.90c, Pittsburgh, depending on widths, and cold-rolled from 2.65c to 2.75c.

Cleveland, Feb. 4.—Hot and cold strip orders are not expanding at the rate makers would like but there is a distinct trend toward better conditions. An inquiry from a maker of parts for Ford Motor Co. involves a carload of wide hot strip per day for the remainder of the quarter; 1.80c, Pittsburgh, has been quoted. Narrow hot strip is held at 1.90c to 2.00c, Pittsburgh. Cold strip tonnage is scarce; 2.65c, Cleveland, is quoted.

Chicago, Feb. 4.—Cold-rolled strip mills are booking more automobile tonnage. Operations are not much above 55 per cent. Hot rolled strip tonnage is growing and operations are 60 to 65 per cent. The prices of 2.00c for narrow hot rolled, and 1.90c for the wide are quoted. Cold-rolled producers are quoting 2.65c, Pittsburgh-Cleveland.

Copper Clad Steel Co., Rankin, Pa., has been granted a refund of $43,553.83 for overassessment of income and profits tax for 1917, according to announcement by the bureau of internal revenue.

Canadian Steel Building

Toronto, Ont., Feb. 4.—Ward B. Perley, president of the Canadian Steel Corp., Ojibway, Ont., subsidiary of the United States Steel Corp., states that initial construction work is well under way on the new tin mill which, when in operation, will have a payroll of 400 men and an annual production of 60,000 tons of tin plate. A number of important contracts have already been let, and every effort will be made to have the plant ready for operation by midsummer.

Cold Finished Steel

Specifications Hold at Improved Level With Slow Improvement

COLD FINISHED PRICES, PAGE 104

Pittsburgh, Feb. 4.—Specifications for cold-finished steel bars hold at the improved rate of preceding weeks although the upturn is slower than early in January. Demand from automotive users continues spotty. The market is holding at 2.10c, base, with the recent reduction to this level expected to have a beneficial effect.

Wire

Orders Are Larger From Manufacturers—Exceed December Volume—Price Pressure Less

SALES of wire and nails show a gain over December and were below those of January, 1929. Manufacturers' wire is active but merchant products are slow. Nails continue to lag. Automotive needs have increased in a moderate degree. Prices are better maintained and less resistance is being met. The chain manufacturers have enjoyed large sales for tire chains.

WIRE PRICES, PAGE 104

Chicago, Feb. 4.—Western wire mills completed January with tonnage not far under January, last year, and a good margin over December. Operations are continuing at 55 to 60 per cent, with improved specifications for manufacturers' wire and sluggish orders for merchant products. Common wire sales are expected to improve within the next 30 days as moderating weather in some distributing territory undoubtedly will stimulate orders. Quotations are 2.45c, Chicago or western mills, for bright wire, and $2.35 to $2.45 for wire nails.

Worcester, Mass., Feb. 4.—The wire market shows little fluctuation. Some strength is developing in building and auto accessory lines with indications of increasing demand. Prices are stationary. Plain bright wire to dealers is quoted at 2.55c to 2.65c, base, Worcester.

New York, Feb. 4.—Nail buying continues sluggish, with prices firmer at $2.30, Pittsburgh-Cleveland. Recent shading of $1 has virtually disappeared. The $2.30 price, however, appears applicable to the trade as well as to jobbers. Wire is unchanged.

Pittsburgh, Feb. 4.—Little further improvement is noted in specifications for wire products but business is holding well at the rate of the past several weeks. January shipments and specifications showed a substantial gain over those of December but failed to equal the activity of a year ago. Merchant products generally are slow with manufacturers' wire in relatively heavier demand. Specifications for the latter from automotive interests continue to come out more freely although the improvement since Jan. 1 has been only moderate. Chain manufacturers report one of the busiest months in history in tire chains. Commercial material is only fairly active. Less pressure is being encountered against prices and the market generally is firm at $2.30 to $2.40 for wire nails, and 2.40c for bright hard wire.

Cleveland, Feb. 4.—Wire nail orders still are scarce, but carry $2.30, Cleveland. Manufacturers' wire orders are more numerous, some coming through from small manufacturers of nuts, bolts and rivets. Several placed last week involved a carload or more, each at 2.40c, Cleveland. Larger users in this class have material still coming on old contracts.

Nonferrous Metals

Rate of New Business Eases Off as Users Appear Well Covered on Immediate Needs —Tin Prices Firm Up—Others Steady

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New Spot	York Tin Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Jan. 29	18.00	18.10	17.12½	39.75	40.30	6.25	6.10	5.25	23.90	8.75	35.00
Jan. 30	18.00	18.10	17.12½	39.95	38.75	6.25	6.10	5.25	23.90	8.75	35.00
Jan. 31	18.00	18.10	17.12½	39.12½	39.75	6.25	6.10	5.25	23.90	8.75	35.00
Feb. 3	18.00	18.10	17.12½	38.87½	39.62½	6.25	6.10	5.25	23.90	8.75	35.00
Feb. 4	18.00	18.10	17.12½	39.12½	38.87½	6.25	6.10	5.25	23.90	8.75	35.00

NEW YORK, Feb. 4.—New business in nonferrous metals has let down a little, following a fair pickup, since users appear to be covered on their immediate needs. Shipments and actual consumption are reported by producers and consumers to be expanding in many lines. The growth is slow but steady.

Brass rolling mill and copper wire mill business has increased. The reason that this is true while pig and ingot metal sales have eased off seems to be that mills have been carrying good inventories of raw materials. Prices of mill products are unchanged.

Copper—A little domestic business is being done every day at 18.00c, Connecticut, and a fair tonnage in the export business. January sales were larger than demand in the two previous months together, but despite this, they were far below normal. Producers undoubtedly accumulated much more stock last month, but they are holding firmly to the price and show no sign of weakening. They have carried the policy of price maintenance so far that it is widely believed they will not change for the present.

Zinc—Prime western buying has quieted down after the recent increase in activity. For the same reason, the recovery in the price, which seemed to be going beyond 5.25c, East St. Louis, a week ago, has stopped at that figure. Users seem to be fairly well covered on their immediate needs. And producers are relieved from selling pressure for the present. Some business has been booked for shipment well ahead. It appears as if it would be difficult to buy much metal beyond this month at 5.25c, with futures generally quoted at a premium of five points.

Tin—Buying was light in the past week, with the result that news of additional progress in curtailment soon lost most of its bullish effect. The latter episode, however, had hardly died away when monthly statistics appeared and showed less of an increase in world visible supply than had been expected. Domestic figures and Straits shipments were about as expected. Following this report, the price again became firm. Metal now afloat for the United States for February arrival is much lighter than usual. The month's figures are subject to many interpretations, and though there are a number of arguments on the side of firmness, it appears as if world use had not yet reached the level of production. The latter may be cut further and the former is expected to rise. Meanwhile supplies are larger than ever before.

Lead—New business is moderately active and prices are firm but unchanged.—*Daily Metal Trade.*

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	23.25
Copper, hot rolled	27.75
Lead, full sheets (cut ½c more)	10.00
Zinc sheet (100-pound base)	$10.50
Zinc strip (100-pound base)	$9.50
Aluminum, flat sheets, up to 10 gage, 3 to 72 inches wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	28.25
Copper	29.25
RODS	
Yellow brass (high, full turnings)	21.25
Naval brass	24.00
WIRE	
Copper	19.87½
Yellow brass (high)	23.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	11.25 to 11.75
Chicago	11.00 to 11.25
Cleveland	11.50 to 12.00
St. Louis	10.00 to 10.25
HEAVY YELLOW BRASS	
Cleveland	7.50 to 8.00
HEAVY COPPER AND WIRE	
New York	14.25 to 14.50
Boston	13.75 to 14.25
Chicago	13.50 to 13.75
Cleveland	13.50 to 14.50
St. Louis	10.00 to 10.50
RED BRASS BORINGS	
New York	10.25 to 10.75
YELLOW BRASS TUBING	
Cleveland	7.50 to 8.00
LIGHT COPPER	
New York	12.25 to 12.50
Chicago	11.75 to 12.25
Cleveland	11.75 to 12.50
St. Louis	10.00 to 10.50
LIGHT BRASS	
Boston	6.50 to 6.75
Chicago	6.25 to 6.75
Cleveland	6.00 to 6.50
St. Louis	5.50 to 6.00
ZINC	
New York	2.75 to 3.00
Cleveland	2.25 to 2.50
St. Louis	2.75
ALUMINUM	
Clippings, soft, Cleveland	14.50 to 15.00
Clippings, hard, Cleveland	11.50 to 12.00
Borings, Cleveland	8.50 to 9.00
Cast, Cleveland	11.00 to 11.50
Cast, Boston	10.50 to 11.00
Cast, St. Louis	10.50 to 11.00

Secondary Metals

Remelt aluminum No. 12	16.25 to 16.75
Brass ingot, 85-5-5-5	15.50 to 15.75

Coke By-Products

Shipment Heavier at Steady Prices—Phenol Demand Is Lighter

New York, Feb. 4.—Light oil distillates are moving in heavier volume at steady prices. Shipments against contracts are more active. A fair total of new business is being placed. Toluol is going to the lacquer trade in sizable shipments. Increased activity by the steel industry has not yet been reflected in larger supplies. Demand for phenol has slowed up. Stocks are slightly larger. Bulk of the business is at 17.00c, with St. Louis reported 1 cent lower. Contract shipments of naphthalene have increased since Feb. 1. By March 1 the spring movement is expected to be in full swing. Refiners' stocks are large in anticipation of this demand. Business continues to drag for prompt delivery. Prices are steady and unchanged. Sulphate of ammonia is slightly more active in bulk and is inclined to steadier prices.

Coke By-Products

Per Gallon at Producers' Plant in Tank Lots

	Spot
Pure bezonl	$0.22
90 per cent benzol	0.22
Toluol	0.35
Solvent naphtha	0.28
Commercial xylol	0.28
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.17 to 0.18
Per Pound at Producers' Plants	
Naphthalene flakes	0.04½ to 0.05½
Naphthalene balls	0.05½ to 0.06½
Per 100 Pounds Delivered	
Sulphate of ammonia	$2.10 to $2.20

Quicksilver Is Quiet

New York, Feb. 4.—Quicksilver is quiet, with little change, but a variety of prices is heard. The market appears to be mostly $123.50 to $124, though 50 cents over and under these figures is heard.

Warehouse

Sales Gaining—Demand Miscellaneous—Many Filling Out Stocks—January has Total Orders Under January, 1929

BUSINESS continues to gain among jobbing interests. Final compilation change preliminary findings noted last week, and it now appears that in the majority of cases January orders and shipments this year fell below those of the comparable period of 1929.

New York—While sheet sales increase, prices continue unsteady. Galvanized sheets are moderately firm at 4.25c to 4.50c but on black the market now appears at 3.65c to 3.90c and on blue annealed at 3.50c to 3.75c. Certain other major products appear fairly steady. Cold-drawn bars and strip steel were reduced $2 a ton, conforming with recent mill decline. Cold-finished bars also take new quantity, analysis, accuracy and special finish extras.

Buffalo—Warehouse business continues to gain slowly, although January sales were not quite equal to those of January, 1929. Individual orders are smaller but the number is increasing.

Pittsburgh—January sales showed a substantial gain over December, despite a falling off from January, 1929. Prices remain fairly steady but shading continues. No price change has yet been announced on cold-finished bars. The concrete reinforcing bar price is under pressure, with the market generally 2.75c.

Cleveland—The flow of business is steady. Individual orders are not large but the total is heavy.

Detroit—Orders for warehouse steel from tool, die and machine shops have receded somewhat after a recent spurt. The automotive situation is spotty. The new quantity differential plan is getting under way and gradually is being made universally applicable.

Philadelphia—Cutting extras and quantity differentials on cold-finished steel are expected to be changed shortly. Jobbers report fair bookings, with prices generally the same.

Cincinnati—January orders were slightly below those of January, 1929. Upturn in call for building materials awaits more favorable weather.

Chicago—Inventory adjustments have been completed by jobbers here, hence stocks are better balanced than for some weeks. Demand for steel from stock increases slowly. January sales were not far below January, 1929.

St. Louis—Except for a limited number of items, business is quiet. Sheet demand fell off slightly but galvanized moves in fair volume to southern consumers.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Houston	3.00c
Los Angeles	3.30c
New York††‡‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
New York††	3.25c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3,265c to 3.50c
Buffalo	2.95c
Chattanooga	3.25c
Cincinnati	3.15c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Houston	3.00c
Los Angeles cl.	2.40c
Los Angeles lcl.	2.70c
New York	2.65c to 3.10c
Philadelphia	2.60c to 3.00c
Pittsburgh	2.75c
San Francisco cl.	2.30c
San Francisco lcl.	2.60c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Houston	3.25c
Los Angeles	3.30c
New York†††‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼ in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New York†‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	2.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.60c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Houston	3.90c
Los Angeles	4.00c
New York ‡‡	3.50c to 3.75c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.25c to 3.35c
San Francisco	3.90c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.75c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore *†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c
Detroit	3.95c
Los Angeles	4.90c
New York	3.65c to 3.90c
Philadelphia*†	3.80c
Pittsburgh**	3.75c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.89c
Tulsa	4.34c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.70c to 4.85c
Chicago (local delivery)	4.60c
Chicago (outside shipment)	4.35c to 4.60c
Cincinnati	4.90c
Cleveland***	4.50c
Detroit	4.60c
Houston	5.40c
Los Angeles	5.30c
New York	4.25c to 4.50c
Philadelphia*†	4.45c
Pittsburgh**	4.40c
Portland	5.50c
San Francisco	5.30c
Seattle	5.50c
St. Louis	4.85c
St. Paul	4.35c to 4.60c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	4.00c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chattanooga	3.45c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit 3/16-in. and lighter	3.30c
Houston	3.65c
Los Angeles	4.15c
New York†‡	3.75c
Philadelphia*	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York†‡	4.25c
Philadelphia*	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons	Flats, squares
Baltimore (c)	3.50c	(a) 4.00c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chattanooga*	3.85c	4.35c(d)
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.50c	4.00c
Philadelphia*	3.50c	4.00c
Pittsburgh	3.70c	4.20c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.64c	5.14c

(a) Rounds only; (d) Squares only.

COLD ROLLED STRIP

Boston, 0.100-inch 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.15c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	13.00c
Iron bars, round..	6.10c
Iron bars, flats and squares	6.50c

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. **Less than 25 sheets. *†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

Pacific Coast

Better Buying Appears—Some Iron and Coke Imports Are Arriving

CALIFORNIA cities are taking more iron and steel products and sales of reinforcing bars and cast iron pipe are better at the month end than previously this year. English coke and pig iron are arriving on old orders but are not greatly needed. Various projects are being placed, requiring moderate tonnages, and others promise to be closed before long.

San Francisco, Feb. 1.—(*By Air Mail*)—Further improvement in demand for iron and steel products is noted, with reinforcing steel bar and cast iron pipe tonnages being the largest weekly total so far this year. Among developments is 24,000 tons of shapes for an airport terminal building in Los Angeles. Important bookings included over 3100 tons of cast iron pipe for Oakland, Calif., placed with the United States pipe & Foundry Co., and 1000 tons of shapes for an office building on South Spring Street, Los Angeles, booked by the Consolidated Steel Corp.

Pig Iron and Coke

While some fair sized lots of foundry pig iron and coke have recently arrived from Europe, demand is by no means active and little improvement is reported in the rate of foundry operations. Approximately 6000 tons of English beehive and by-product coke has arrived, 400 tons of which is destined for Seattle and remainder divided evenly between Los Angeles and San Francisco foundries. Another shipment of about 1500 tons of English coke will arrive about Feb. 10. This will be applied against contracts placed some time ago. English beehive coke is held at $16 to $17 a net ton, delivered incoming dock, while by-product ranges from $12.50 to $13 a net ton. One importer has just delivered 1000 tons of British Indian iron, about half of the tonnage going to Los Angeles interests. Another shipment of the same class of iron will arrive Feb. 7, more than 1300 tons being aboard. No change is noted in quotations on foundry iron.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Contract bar lettings this week aggregated 1593 tons, compared with 1609 tons for the weekly average in 1929. The Salt River bridge near Phoenix, Ariz., involving 896 tons, went to Lynch-Cannon Co., Los Angeles, general contractor, the steel being placed with an unstated interest. W. S. Wetenhall Co. took 130 tons for a dyeing plant in San Francisco. Unnamed interests secured 487 tons for six paving projects in California. The largest pending project involves 3500 tons for a bridge in Los Angeles, bids on which were opened this week. Prices on merchant bar steel remains firm at 2.35c, c.i.f. while out-of-stock prices on concrete bars in San Francisco continue at 2.30c, base, on carload lots, and 2.60c on lesser quantities.

Plate business was confined to lots of less than 100 tons. Plate fabricators report some activity in small tanks for various oil companies. Prices are by no means firm at 2.25c, c.i.f., and desirable lots would no doubt bring quotations of $2 a ton lower.

Shape awards totaled 2827 tons, compared with the weekly average during 1929 of 3623 tons. Palm Iron Works secured the American River bridge at Sacramento, 325 tons, bids on which were opened several months ago. The Moore Drydock Co. took 150 tons for a gantry crane at Newark, Calif., for the Arden Salt Co. Consolidated Steel Corp. obtained 166 tons for a factory and 184 tons for a pipe warehouse, both in Los Angeles. In addition, numerous small lots were reported booked. Considerable interest is being displayed in the airport terminal building at Los Angeles, which will require 24,000 tons. Unconfirmed rumor states that McClintic-Marshall Co. will be awarded the steel, but this project is not expected to go ahead for some time yet as laws must first be passed for permitting airplanes to land in the city proper. Plain shapes are firm at 2.35c, c.i.f, coast ports.

Other Finished Material

In addition to the Oakland tonnage of cast iron pipe, 3142 tons, the United States Pipe & Foundry Co. took 134 tons for Alhambra, Calif. This city also placed 1335 tons with the National Cast Iron Pipe Co. Lee R. Weber took 426 tons for the improvement of Villa Park, Santa Ana, Calif. Bookings this week totaled 5034 tons, compared with 1580 tons, the average weekly total for 1929. Los Angeles opened bids on 635 tons of 6-inch class 150 pipe and the American Cast Iron Pipe Co. was low bidder on 1693 tons for Downey, Calif. San Diego will open bids Feb. 17 for 189 tons for the improvement of Fifty-fourth street.

Republic Gives Group Broad Powers

Cleveland, Feb. 4.—The detailed plan and agreement by which the Republic Steel Corp. is to become effective confers broad powers upon a committee composed of the following 12 men: John A. Topping, E. T. McCleary, Philip Wick, F. J. Griffiths, W. G. Mather, F. H. Hobson, Paul Llewellyn, R. S. Hall, L. H. Elliott, M. L. Hopkins, W. R. Burwell and W. O. Witherow.

By paragraph 7 of the deposit agreement, the committee is given the power of the right "to acquire one or more new corporations, including the organization of one or more subsidiaries to acquire part of the assets of any constituent company or its subsidiaries, or may adopt or use any existing or future corporation and make such consolidations, purchases, sales and arrangements, either in its own behalf or for the depositors and/or of the constituent companies, as the committee may deem advisable for carrying out this plan." The committee is not only given certain specific powers but also is freed of responsibility for errors of judgment, mistakes in fact or law, and other causes of possible dispute.

It is interpreted that the opening for future mergers and acquisitions in the iron and steel industry along with the necessary powers are given to this committee.

Bethlehem Offers More Stock to Employes

New York, Feb. 4.—E. G. Grace, president, Bethlehem Steel Corp., announced today that since the corporation first offered preferred stock to its employes six years ago they have paid under the saving and stock ownership plan more than $22,000,000 and have received in dividends and special benefits approximately $4,000,000. During the last six years about 35,000 employes, practically half the total number, have become stockholders.

Mr. Grace also announced a new offering to employes of Bethlehem 7 per cent cumulative preferred stock. While the offering price is $125 per share, under the Bethlehem plan only $113.56 per share subscribed will be deducted from the employe's wages. While he is paying for his stock he will be credited with dividends and also will receive special benefits of $1 to $5 per share for each share he holds of the stock up to five years.

Inland Buys Coal Mine

Chicago, Feb. 4.—Inland Steel Co. has purchased the Wheelright mine with plant and equipment and has leased 11,000 acres of coal from the Elk Horn Coal Corp. in the eastern Kentucky coal district.

Chain Business of Rounds Is 60 Years Old

Looking back to 1869, when David Round started a small chain shop at Newburgh, O., then an industrial rival of Cleveland, the group of industries headed by Louis D. Round, son of the founder, has published an attractive booklet commemorating the completion of 60 years of service in the making of steel chain.

From the small start at Newburgh the business has grown to include five large plants—David Round & Son, Cleveland Chain & Mfg. Co., Krein Chain Co., Seattle Chain & Mfg. Co. and Bridgeport Chain & Mfg. Co.

David Round, 1840-1906, born in England, mastered the art of chain-making as a boy in Staffordshire, England, at a forge erected in the basement of the old homestead. Louis D. Round, his only son, entered the business when only 16. In 1887 he was made a partner, the firm becoming David Round & Son, as today. Louis Round succeeded to the ownership of the partnership and president of the Cleveland Chain & Mfg. Co., which he organized.

Under the leadership of Louis D. Round a nation-wide organization was brought together, including the five interests before-mentioned, with plants in Cleveland, Seattle, Wapakoneta, O., and Bridgeport, Conn. The development of the electric welding process is cited in the booklet as a noteworthy achievement of Mr. Round. The booklet gives the histories of the various companies, sketches of the officers and details of the plants.

3,000,000-Pound Testing Machine on Display

Southwark Foundry & Machine Co., Philadelphia, announces the completion of a 3,000,000-pound testing machine, a single-cylinder machine equipped with the Emery-type weighing system in the crosshead and said to be one of the largest testing machines ever constructed. It is to be installed at the University of Illinois, but will be available for inspection until Feb. 21 at the plant of the Southwark company, 400 Washington avenue.

Iron and Steel Electrical Engineers To Meet

Plans are being prepared by the Association of Iron and Steel Electrical Engineers for its annual convention and iron and steel exposition, to be held June 16-20 at the Broadway auditorium, Buffalo. More than 50,000 square feet will be devoted to the display of various steel plant equipment.

A tentative program has been arranged for the technical sessions to be held in connection with the convention. Papers will be presented on electric welding and heating, electric development in the iron and steel industry, use of antifriction bearings on motors and cranes, gas production and utilization and other subjects relating to production and maintenance in the industry. John F. Kelly, Empire building, Pittsburgh, is managing director of the association.

Wellman-Seaver-Morgan May Change Name

Cleveland, Feb. 4.—Wellman-Seaver-Morgan Co. stockholders' annual meeting will be held Feb. 18 at which time consideration will be given a possible change of the company's name to the Wellman Engineering Co., the better to describe its operations.

Sales of Babbitt Slump

Washington, Feb. 4.—December, 1929, sales of babbitt for apparent consumption show a large decline from the preceding month and are also lower than December, 1928. Consumption by producers is also off. Monthly comparisons, according to the department of commerce, follow:

	Total apparent consumption	Sold by manufacturers	Consumption by producers
	(Figures given in pounds)		
1928			
December	4,985,942	4,148,601	837,341
Tot. (1928)	59,676,765	47,338,625	12,338,140
1929			
January	6,093,267	4,876,506	1,216,761
February	5,720,243	4,695,669	1,024,574
March	6,465,613	5,171,047	1,294,566
April	6,046,445	4,857,258	1,189,187
May	5,478,697	4,248,662	1,230,035
June	5,927,907	4,820,953	1,106,954
July	5,360,711	4,047,887	1,312,824
August	5,432,597	3,997,427	1,435,170
September	5,225,004	3,887,599	1,337,405
October*	5,518,851	4,007,260	1,511,591
November	4,522,034	3,205,689	1,316,345
December	3,341,492	2,392,159	949,333
Total (year)	65,132,861	50,156,760	14,976,101

*Revised.

Suspends Rail Rates

Washington, Feb. 4.—Interstate commerce commission has suspended until Aug. 30 certain railroad schedules which propose to change the rates on iron and steel rails, in carloads, from Huntington, W. Va., Newark, O., and other points in central freight association territory to destinations in Virginia, West Virginia and Maryland, including some other points in central freight association and eastern trunk line territories, resulting in numerous increases and reductions.

Furnace Pipe Makers To Confer On Coke

Washington, Feb. 4.—Federal trade commission has authorized the holding of a trade practice conference for manufacturers of furnace pipe and fittings. Applicants for the conference represent 80 per cent of the production. No time or place has been determined for the meeting, but Commissioner Charles H. March has been designated to supervise it. The industry has requested that the conference be held in Chicago.

Among subjects proposed for discussion with a view to providing for elimination of unfair trade practices are: Price discrimination, secret rebates, and unwarranted use of the joint shipment plan and pooled cars.

Colorado Pays Dividend

A quarterly dividend of 50 cents a share on common stock and the regular quarterly dividend of $2 a share on preferred has been declared by the Colorado Fuel & Iron Co. Both are payable Feb. 25 to holders of record Feb. 10. This is the first payment on common stock since 1921. There are 342,000 shares of common stock outstanding.

Spackman Heads Bank

Coatesville, Pa., Feb. 4.—Horace B. Spackman, formerly vice president of Lukens Steel Co. has been elected president of the Coatesville Trust Co., succeeding the late Abram F. Huston.

Pig Iron

(*Concluded from Page* 105)

nage equal to or larger than their production. Sloss-Sheffield Steel & Iron Co. blew in No. 3 blast furnace at North Birmingham this week. The company now has three furnaces in operation. Quotations are unchanged.

Philadelphia, Feb. 4.—The pig iron order which a Delaware river pipe plant placed with a New England furnace, as reported last week, involved 10,000 tons for water shipment. The largest buying in this district in the past week was by a radiator manufacturer. Prices are unchanged. Fully 15,000 tons of low phosphorus iron was sold in this district during January. The Rundle Mfg. Co. is inquiring for foundry iron for its new plant at Camden, N. J.

Toronto, Ont., Feb. 4.—Business in the Canadian pig iron markets is on a more stable basis. Expected price reductions have failed to appear and melters now seem satisfied that no change will be made in the immediate future. Spot orders have increased. Prices are firm.

Pig Iron In First Gain Since May

Daily Rate Increases Only 52 Tons Over December but 16 Added Stacks Augur Well for February

AFTER declining steadily since last June, pig iron production in January rose fractionally to a daily rate of 91,565 gross tons compared with 91,513 tons in December and 110,742 tons last January.

More encouragement may be derived from the fact that as of Jan. 31 there were 172 blast furnaces active, 16 more than on Dec. 31. Since most of the added stacks did not come in until the last half of January, the full reflection of the improved operating situation will not be felt until February. With the abandonment of two Suwanee stacks in Kentucky the list of potential stacks is reduced to 314, against 328 a year ago.

On a monthly basis January's output of pig iron was 2,838,543 tons, against 2,836,917 tons in December and 3,433,028 tons in January, 1928. January's total includes 610,238 tons of merchant iron, a slight decline from December, and 2,228,305 tons of steel works iron, a slight gain. Janpary output of ferromanganese and spiegeleisen was 32,761 tons, compared with 40,375 tons in December and 37,210 tons last January.

Relating production to the pig iron capacity of the country, with capacity estimated by the American Iron and Steel institute at 50,367,665 gross tons, January saw 66.4 per cent of the country's capacity engaged. This compares with 66.3 per cent in December and 80.3 per cent in January, 1928. It is expected that this ratio will be changed when the institute revises its capacity figure and as of Dec. 31, 1929, takes cognizance of the blast furnace stacks abandoned last year.

Steelworks stacks lighted during the month include four by the Illinois Steel Co., three by the Bethlehem Steel Co., two by the Republic Iron & Steel Co. and one each by the Tennessee Coal, Iron & Railroad Co., Jones & Laughlin Steel Corp., National Tube Co. and Corrigan, McKinney Steel Co., which blew out the only steelworks stack during the month. The Davison Coke & Iron Co. blew in two merchant stacks and dropped one. The Youngstown Sheet & Tube Co. added and blew out one merchant stack. The Roane Iron Co. blew out one stack. The Delaware River Steel Co., Woodward Iron Co., Shenango Furnace Co. and St. Louis Gas & Coke Corp. blew one merchant stack in.

MONTHLY PRODUCTION

	1930	1929	1928	1927
Jan.	2,838,543	3,433,028	2,855,515	3,101,346
Feb.	.....	3,218,376	2,898,668	2,940,604
Mar.	.....	3,709,518	3,199,175	3,482,107
April	.....	3,663,167	3,181,975	3,424,377
May	.....	3,898,344	3,292,790	3,391,067
June	.....	3,715,104	3,082,340	3,089,726
July	.....	3,782,511	3,072,711	2,954,625
Aug.	.....	3,746,198	3,136,995	2,950,674
Sept.	.....	3,496,454	3,063,593	2,782,500
Oct.	.....	3,588,146	3,373,539	2,812,015
Nov.	.....	3,182,420	3,304,656	2,661,863
Dec.	.....	2,836,917	3,369,784	2,698,208
Total	.....	42,270,183	37,831,741	36,289,112

RATE OF OPERATION

(Relation of Production to Capacity)

	1930	1929†	1928*	1927‡
January	66.4	80.3	67.8	71.2
February		83.3	73.6	74.7
March		86.7	76.1	79.8
April		88.7	78.0	81.2
May		91.1	78.3	77.7
June		89.8	76.0	73.2
July		88.4	73.2	67.7
August		87.3	74.4	67.6
September		84.5	75.2	65.9
October		83.9	79.3	64.5
November		76.9	81.1	63.0
December		66.3	80.2	61.8

....†Based on capacity of 50,367,665 tons as of Dec. 31, 1928. *Based on capacity of 49,605,720 tons. ‡Based on capacity of 51,379,400 tons. Capacities computed by American Iron and Steel institute.

AVERAGE DAILY PRODUCTION

	1930	1929	1928	1927	1926
Jan.	91,565	110,742	92,113	100,043	107,039
Feb.	.....	114,942	99,954	105,021	104,423
Mar.	.....	119,662	103,199	112,326	111,554
Apr.	.....	122,106	106,066	114,146	114,627
May	.....	125,753	106,219	109,388	112,187
June	.....	123,837	102,745	102,991	107,749
July	.....	122,016	99,120	95,311	104,021
Aug.	.....	120,845	101,193	95,183	103,249
Sept.	.....	116,548	102,120	92,750	105,442
Oct.	.....	115,747	108,824	90,710	107,555
Nov.	.....	106,081	110,155	88,728	107,933
Dec.	.....	91,513	108,702	87,039	99,651
Ave.	.....	115,808	103,365	99,422	107,126

DIVISION OF PRODUCTION

1929	Merchant	Non-merchant	Spiegel and ferro-manganese
Jan.	744,448	2,688,580	37,210
Feb.	665,648	2,552,728	34,419
Mar.	740,966	2,968,552	37,997
Apr.	740,311	2,922,856	44,406
May	772,014	3,126,330	35,598
June	716,715	2,998,389	43,218
July	741,622	3,040,889	41,137
Aug.	682,048	3,064,150	40,527
Sept.	643,197	2,853,257	38,038
Oct.	739,060	2,849,086	39,640
Nov.	737,591	2,444,829	37,328
Dec.	661,343	2,175,574	40,375
Total	8,584,963	33,685,220	469,893
1930			
Jan.	610,238	2,228,305	32,761

JANUARY PIG IRON PRODUCTION

	No. in blast last day of month		Total tonnage made		Totals	
	Jan.	Dec.	Merchant	Nonmerchant	Jan.	Dec.
Ohio	37	32	132,809	477,719	610,528	590,862
Pennsylvania	58	54	103,201	813,603	916,804	907,311
Alabama	16	14	102,683	128,354	231,037	229,654
New York	12	11	95,509	84,999	180,508	161,088
Illinois	16	15	116,039	185,267	301,306	310,035
Colorado	3	3				
Indiana	14	11				
Maryland	5	4	9,770	409,604	419,374	413,773
Virginia	2	2				
Wisconsin	0	0				
Kentucky	0	0				
Massachusetts	1	1				
Tennessee	0	1	16,350	56,162	72,512	100,504
Utah	1	1				
West Virginia	2	2				
Michigan	3	3				
Minnesota	2	2	25,431	48,282	73,713	83,315
Missouri	0	0				
New Jersey	0	0				
Spiegel and ferro—all states	....	....	8,446	24,315	32,761	40,375
Total	172	156	610,238	2,228,305	2,838,543	2,836,917

Associations Censure Lavish Entertaining

New York, Feb. 4.—American Oil Burner association, in a bulletin issued recently condemns unwarranted and lavish entertainment at trade conventions, according to directors' resolutions adopted at a meeting in Chicago. This stand is in conformity with like action by other associations including American Foundrymen's, Foundry Equipment Manufacturers,' National Machine Tool Builders' and the Association of National Tool Dealers.

Iron, Steel Output In Canada High

Canadian pig iron production reached a new high level in 1929 when 1,090,244 tons was produced, surpassing the war-time peak of 1,067,456 tons in 1918. Steel output rose also to a higher level than 1928 when in 1929 1,379,688 tons was turned out. Increased needs for iron and steel in the railway rail, mining, construction, power development and automotive activities reveal the contributing factors for this rise.

December production of pig iron at 82,632 tons suffered a slight decrease from the preceding month, and steel ingots and castings for the same month touched a low for the year at 82,415 tons or 12 per cent under the output for the previous month. This decline is to be noted in both electric furnace and basic open-hearth ingots, although an increase in steel castings was perceptible.

Prices of pig iron were well maintained during the first three quarters of 1929. However, in October the weight of production records in both United States and Canada told upon prices. The index of prices for iron and its products rose from 93.2 in 1928 to 93.7 in 1929, although December levels and those of most of the last quarter touched a low for the year and were close to 1928 levels.

Ferroalloys' production was also under the mark of November, but for the year period showed a 77 per cent increase over 1928 in producing 80,010 tons. There were only five plants, all in Ontario, producing ferroalloys in 1929.

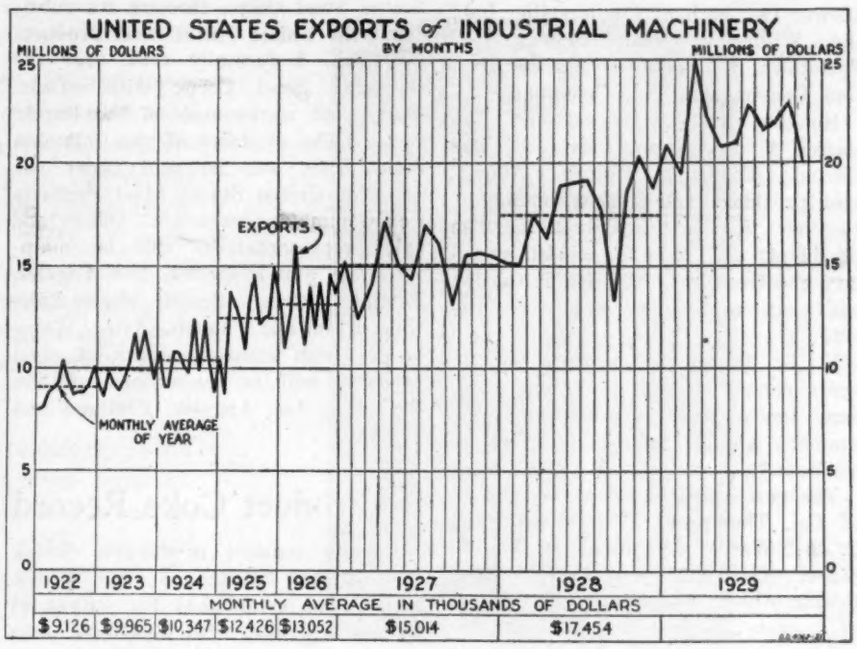
Canadian iron and steel production centered in Ontario, has chief among its companies the following: British Empire Steel Corp. Ltd., Steel Co. of Canada Ltd., Algoma Steel Corp., Canadian Furnace Co., which have ready for operation a total of 11 blast furnaces capable of producing 1,500,000 tons of pig iron a year if worked to capacity.

Reconsider Algoma Mill

Toronto, Ont., Feb. 4.—Plans for construction and financing of a structural steel mill in connection with the Algoma Steel Corp.'s plant at Sault Ste. Marie, Ont., were discussed at the regular monthly meeting of the board of directors of the Lake Superior Corp. a few days ago.

Plans for the mill were originally made several years ago, but it is only recently that the company has been in a position to undertake such financing as would be necessary. Part of the ground work for the construction of the mill was laid by the subsidiary steel company some years ago, when the company expended approximately $2,000,000 clearing the land, completing some of the steel frame construction and building the soaking pits before work was abandoned.

November Machinery Exports Show Sharp Decline



EXPORTS of American industrial machinery took a rather sharp downward turn during November, 1929, falling by some $2,633,000 or 12 per cent under October, 1929, and being even less than those made during November, 1928. However, while of current interest, this can be regarded as merely a trade fluctuation and does not much affect the general upward trend in foreign sales of machinery which has been evident throughout the year. Thus for the 11 months ending with November, these totaled over $237,500,000 or $31,290,000 and 15 per cent more than for the entire year 1928, and exceeded the volume reached during the first 11 months of 1928 by $6,700,000 or 24 per cent, says the industrial machinery division, department of commerce.

Among the principal classes of industrial machinery, foreign sales of mining and quarrying machinery, power pumping equipment, metal working machinery, sewing machines for factory use, steam engines and water wheels and water turbines during November declined somewhat under those for the same month of the previous year, the decrease in the case of the last two types named being particularly notable. On the other hand, as compared with November, 1928, exports of oil well and refinery machinery, textile machinery and shoe machinery during November, 1929, rose substantially and those of internal combustion engines and construction and conveying machinery showed gains of 39 per cent and 17.5 per cent, respectively.

While the total for the first 11 months of 1929 is well above that for the corresponding period of 1928, foreign sales of American metal working machinery during November fell by 19 per cent under November, 1928. Among the various lines in which declines occurred were lathes, vertical boring mills and chucking machines, gear-cutting machines, drilling machines, sheet and plate metalworking machines, foundry and molding equipment and pneumatic portable tools. On the other hand several items showed gains, including planers and shapers and metal grinding machines, while exports of thread cutting and automatic screw machines, milling machines, and forging machinery were double, and those of rolling mill machinery triple the volume attained in November, 1928.

P. H. & F. M. Roots Co. to Stacey Engineering

The P. H. & F. M. Roots Co., original patentees and for 70 years manufacturers of rotary positive blowers, pumps and meters, has merged with other interests and is now under the control of the Stacey Engineering Co., Columbus, O.

The new organization includes the Roots company and the Connersville Blower Co., both of Connersville, Ind., the Wilbraham-Green Blower Co., Pottstown, Pa., and the Stacey Bros. Gas Construction Co., Cincinnati.

Heading the list of officers, Col. Carmi A. Thompson, Cleveland, was elected president; Corwin Abbott, vice president and general manager; Fletcher S. Heath, Columbus, vice president; and Erle G. Meeks, secretary and treasurer. Charles T. Gordon will continue as general superintendent.

E. D. Johnston, for the past 45 years connected with the Roots company, has resigned as president of the company and has retired from active business.

The new board of directors consists of Col. Thompson, F. S. Heath and C. A. Ward of Columbus; W. B. Stacey, Cincinnati, and J. T. Wilkin, Corwin Abbott and Charles T. Gordon, of Connersville.

All companies involved in the merger will maintain their separate identities and organizations, and will continue to operate separately until the final plans of the merger can be consummated.

Scrap on Mileage Basis

A decision which may have important bearing on the general revision of the freight rate structure on scrap iron and steel was handed down recently by the interstate commerce commission in Newport News Shipbuilding & Dry Dock Co. vs. Baltimore & Ohio railroad, et al. The order provides for new rates on scrap from and to certain points, based on 70 per cent of the basic scale of rates, prescribed in docket No. 17,000, providing for a mileage basis in iron and steel articles. The decision, which provides for publication of the new rates on or before April 14, covers the following points from Newport News Va., to Baltimore and Sparrows Point, Md.; New Castle, Del.; Roebling, N. J.; and York, Pencoyd, Conshohocken, Phoenixville, Columbia, Birdsboro, Harrisburg, Steelton, Reading, Lebanon, Bethlehem, Burnham and Williamsport, Pa.; and from Richmond, Va., to Baltimore, Md.

In the opinion of the traffic bureau of the Institute of Scrap Iron and Steel this case may serve as a precedent to be followed by the commission in the general revision of scrap iron and steel rates to a mileage basis for official territory, which covers all points east of the Mississippi river and north of the Ohio river.

Columbia Passes to Corp.

New York, Feb. 4.—The United States Steel Corp., through its subsidiary, the United States Steel Products Co., Feb. 1 formally took over the Columbia Steel Corp., with offices, plants and warehouses on the Pacific Coast. The products of the Columbia Steel Corp. will be sold under the name of United States Steel Products Co., Columbia department. Offices and sales representatives will be maintained in San Francisco, Los Angeles, Portland, Oreg., Seattle, Salt Lake City, Utah, and Phoenix, Ariz. Warehouses with assorted stocks of steel products will be maintained at San Francisco, Los Angeles, Portland and Seattle.

By-Product Coke Record

Despite reduced production during the last few months of 1929, a new record was established for output of by-product coke, with 53,475,481 tons for the year, according to the bureau of mines. Production of beehive coke for the year amounted to 6,015,000 tons, an increase of 33.9 per cent over 1928, but less than half the output of 12,489,000 tons attained in 1926. Diminishing activity at blast furnaces in the latter part of the year reduced the requirements for beehive coke. Total output of by-product and beehive coke for 1929 was 59,490,481 tons, compared with 52,805,828 tons in 1928.

Form Steel Credit Body

New York, Feb. 4.—Manufacturers and jobbers in the metal industries have organized the Steel Trade Credit Association Inc., with offices to be at 60 East Forty-second street, Daniel A. Daly in charge. Temporary offices are at 608 East 133rd street. Among the forty members are: Joseph T. Ryerson & Son Inc., Simon & Mills Inc., Standard Steel Sections Inc., Lally Column Co., Long Island Structural Steel Co., National Bridge Works and Atlantic Steel & Pipe Corp.

In 1600 William Gilbert, a celebrated English natural philosopher, discovered that when a magnet is heated to redness it loses its magnetism.

Steel Corporation's 1929 Pensions $3,940,678

Pittsburgh, Feb. 4.—The nineteenth annual report of the United States Steel and Carnegie Pension Fund shows that in 1929 $3,940,678 was paid as pensions to retired employes of the Steel corporation and subsidiaries. Carnegie Steel Co. was first in the amount, with $964,086.

Disbursements by some of the other companies were: American Steel & Wire Co., $704,484; American Sheet & Tin Plate Co., $494,711; National Tube Co., $471,982; H. C. Frick Coke Co., $343,414; Illinois Steel Co., $207,570; American Bridge Co., $182,753; Oliver Iron Mining Co., $159,859; Duluth & Iron Range Railroad Co., $69,301; Tennessee Coal, Iron & Railroad Co., $60,307; Elgin, Joliet & Eastern Railway Co., $46,582; Bessemer & Lake Erie Railroad Co., $44,919; Lorain Steel Co., $30,696, and Duluth, Missabe & Northern Railway Co., $29,219.

Employes added to the pension roll during 1929 numbered 1007 and 587 were removed from the list. At the close of the year 7420 were on the pension roll. The average age of the 12,524 employes retired from 1911 to 1929 was 63.57 years; their average period of service was 31.26 years and the average monthly pension $38.75. The total amount paid in pensions since the inauguration of the plan, Jan. 1, 1911, was $26,266,100.82.

National Steel Growing; on Dividend Basis

Development of National Steel Corp., Pittsburgh, brings announcement of a new mill at the plant of the Weirton Steel Co., Weirton, W. Va., to roll standard rails, splice bars, structural shapes, angles and merchant bars. The mill will be in operation by next fall and will diversify production at the Weirton plant. By-product coke output will be increased 150,000 tons.

Other recently-announced developments include the rebuilding of a blast furnace stack at Weirton, to be ready in April, increasing its capacity to 1100 tons per day; purchase of 1100 acres on the lake front near Gary, Ind., for a western mill; purchase of a 21-inch bar mill for the plant of Great Lakes Steel Corp., Detroit; rebuilding of blast furnace stacks of the M. A. Hanna Co., near Detroit, to furnish hot metal for the Great Lakes plant.

National Steel Corp. has declared its initial quarterly dividend of 50 cents a share, placing it on a $2 annual basis. The dividend is payable March 10.

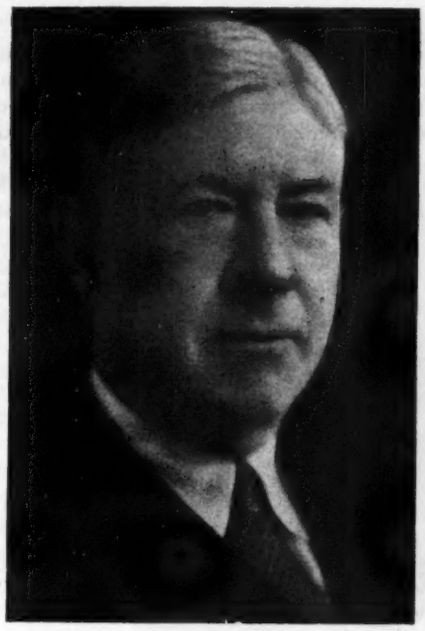
Industrial Men in the Day's News

Charles A. Otis Jr., Senior Partner, Otis & Co., Cleveland

WITH a background of experience in his youth among iron and steel companies, he makes a prominent reentry into that industry in the recent merger forming Republic Steel Corp.

DESCENDED from a family of steelmakers, he was engaged for several years in representing steel accounts in the Cleveland district with Otis, Hough & Co.

A PROMINENT Clevelander, head of one of the foremost banking and brokerage houses in the country, he has been identified with financial circles for more than 30 years.



BEHIND the recently-negotiated merger of Republic Iron & Steel Co., Central Alloy Steel Corp., Donner Steel Co., Bourne-Fuller Co. and Trumbull-Cliffs Furnace Co., forming the third largest steel enterprise in the country, is the figure of Charles A. Otis, senior partner of Otis & Co., Cleveland, dealing in securities.

The affiliation of Charles A. Otis with the iron and steel industry has been influenced largely by ancestral backgrounds. His grandfather was founder of a small iron furnace in Cleveland's early days. The perpetuation of that interest was accomplished by his father—Charles A. Otis Sr.—in the establishment at Cleveland of a steam forge in 1851. This subsequently was expanded rapidly until in 1873 Otis Iron & Steel Co. was incorporated for $300,000 as the first steel concern in the country for the exclusive purpose of producing open-hearth steel. All this shaped the destiny of the present Charles A. Otis to enter the steel industry.

After graduation from Sheffield scientific school of Yale university in 1890, he spent several years on a ranch in Colorado. He returned to Cleveland and entered the sales department of the Otis Steel Co., where he remained for about a year. Differing with its sales policies, Mr. Otis, with Addison H. Hough, organized the firm of Otis, Hough & Co. to engage in the iron and steel commission and agency business. A number of accounts were exclusively and efficiently handled over a period of four years for the northern Ohio and lower Michigan districts. Accounts for Jones & Laughlin Steel Ltd., Pennsylvania Tube Co. and Painter & Sons were represented by Otis, Hough & Co., as well as the National Car Wheel Co. for a time.

However, sales commission arrangements by the large steel companies were gradually being replaced with the established of their own agencies. Consolidations, such as the United States Steel Corp., were being formed. This trend gradually changed the character of his effort. The background of his family's interest in the American Steel & Wire Co. which became a part of the Steel corporation, as well as his own experience in the steel industry, gave Mr. Otis the opportunity to supply local facilities for trading in their security issues.

To this end, in 1899, he purchased the first seat on the New York Stock Exchange ever owned by a Clevelander. In 1900, the following year, he effected the reorganization of the commission firm which then was operated as Otis & Hough, brokers and bankers. Mr. Otis was largely instrumental in forming the Cleveland Stock Exchange, of which he has been president. In the past 30 years he has developed a large and reputable security house in Otis & Co., which succeeded Otis & Hough. He has, however, always maintained some interest in the iron and steel industry through his activities and many friendships in that field, although his later business interests have been confined to the financial phase.

Mr. Otis has lived in Cleveland the greater part of his life, as did his father and grandfather. He is president and director of the Otis Safe Deposit Co., member

of the advisory board of the Union Trust Co., vice president and director of the Kanawha & Hocking Coal & Coke Co., and serves as director in the following: Otis Steel Co., Bulkley Building Co., and William Edwards Co. His interest in the social and charitable work, as well as the civic development of Cleveland has been manifest in a practical way for many years. A country estate and farm at Waite Hill, near Willoughby, O., has been the scene of his hobbies and interests in horses, stock and dog breeding, and farming.

Men of the Industry

RAY P. FARRINGTON has resigned as vice president and treasurer of the Heintz Mfg. Co., Philadelphia, to become representative in the Philadelphia territory, with offices in the Bank of Philadelphia & Trust Co. building, for the Follansbee Bros. Co., Pittsburgh. During his 23-year industrial career, Mr. Farrington has obtained a broad experience in the manufacture, use and sale of steel sheets. After he was graduated in 1906 from Pennsylvania State college's mines and mining course, where he specialized in iron and steel metallurgy, he engaged in engineering work in open-hearth furnace construction at the South Side plant, Jones & Laughlin Steel Corp., Pittsburgh, and later served for two years as instructor in mining and metallurgy at the University of Pittsburgh. In 1909 he became identified with the West Penn Steel Co., Brackenridge, Pa., and a year later entered the selling field, becoming associated with MacFarland & Little, Philadelphia. There he assumed charge of sales of flat rolled steel products of the West Penn, West Leechburg and Pittsburgh Cold Rolled Steel companies and later became sales representative of the Trumbull, Newton and Falcon Steel companies. In 1920 he organized the Ray P. Farrington Co. to sell sheets, tin plate, steel containers, etc., and in 1922 with Leo I. Heintz, formerly works manager of the Edward G. Budd Mfg. Co., Philadelphia, he organized the Heintz Mfg. Co. to manufacture stampings, with Mr. Heintz as president and Mr. Farrington as vice president and treasurer, the office he recently relinquished to join the Follansbee company.

RAY P. FARRINGTON

* * *

William J. Brant, Pittsburgh, secretary-treasurer of the Pittsburgh Foundrymen's association, has been elected a director of the Industrial Silica Corp., Youngstown, O.

* * *

Edward N. Hurley, chairman of the Hurley Machine Co., Chicago, and formerly chairman of the United States shipping board during the war, has been elected president of the American Manufacturers' Export association.

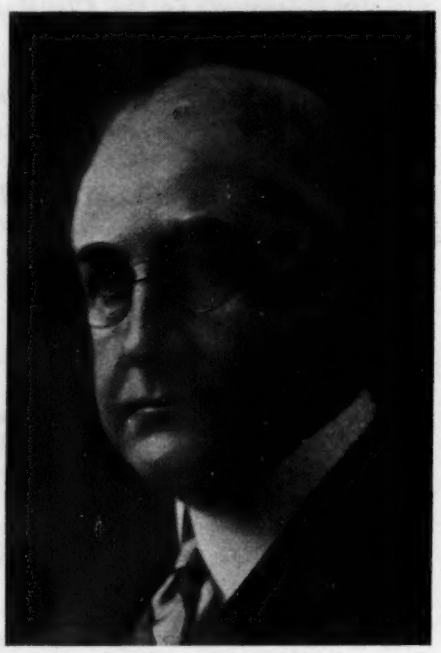
* * *

E. G. Campbell, formerly manager of the Cincinnati warehouse of the Follansbee Bros. Co., Pittsburgh, has been appointed manager of the jobbing department of that company in Detroit. He assumes the former duties of H. C. Pletscher, who has been appointed Detroit district manager of mill sales.

C. J. Terstegge, manager of the Louisville warehouse of the Follansbee company, succeeds Mr. Campbell at Cincinnati but for the time being will continue in charge at Louisville also.

* * *

Richard B. Carr, well known iron and steel man on the Pacific coast and in many eastern cities, has retired as manager of the rail, plate, bar and shape department of the United States Steel Products Co. at San Francisco. His retirement follows 29 years active service with the United States Steel Corp. Mr. Carr was born in Will county, Illinois. Following his graduation from the high school at Evanston, Ill., he was associated from 1891 to 1896 with several Chicago representatives of steel companies, including the Falcon Iron & Nail Co., Falcon Sheet & Tin Plate Co. and Singer, Nimick Co. During 1897 he was with the Falcon companies at Niles, O. In the latter year he became a manufacturer's agent in Chicago and on July 1, 1899, was appointed representative there for the New Philadelphia Iron & Steel Co. Mr. Carr was with the sales department of the American Hoop Co. at Pittsburgh and New York from 1900 until the formation of the United States Steel Corp., at which time he was made general manager of sales of the American Hoop Co. at New York. In 1901 he became associated with the sales department of the Carnegie Steel Co., Pittsburgh, remaining until 1905, when he was transferred to San Francisco as manager of sales for the Carnegie, Illinois, Tennessee and Lorain companies. When the United States Steel Products Co.



RICHARD B. CARR

was formed Oct. 1, 1911, he was made manager of sales of the rail, plate, car and shape departments for its Pacific Coast offices.

* * *

W. H. Stark, vice president, Sabine Supply Co., Orange, Tex., was recently made chairman of the board. B. F. Brown was re-elected president.

* * *

Herbert A. May, vice president of the Union Drawn Steel Co., Beaver Falls, Pa., has been elected a director of the Pittsburgh Steel Foundry Corp.

* * *

R. C. Harvey, formerly district sales representative at Atlanta, Ga.,

C. C. OSTERHOUT

Appointed Manager of sales, Rome division, Wrought Iron Co. of America, Lebanon, Pa., as noted in IRON TRADE REVIEW of Jan. 23, page 69

for Ohio Injector Co., Wadsworth, O., has been transferred to St. Louis, in charge of that district.

* * *

L. B. Davis has been made secretary of the Perfect Circle Co. to succeed L. S. Bowman, who has become secretary of the Indiana board of tax commissioners.

* * *

Arthur C. Pletz has resigned as assistant sales manager, Pratt & Whitney Co., Hartford, Conn., to become associated with the production department of Aluminum Industries Inc., Cincinnati.

* * *

Theodore Ahrens has resigned as president of the American Radiator Co., but will continue as president of the American Radiator & Standard Sanitary Corp., New York. Rolland J. Hamilton, for many years vice president, has been elected president of the American Radiator Co.

* * *

George P. Galvin, formerly manager of Dallas, Tex., plant of the Berger Mfg. Co., Canton, O., has resigned to become manager of culvert sales for Wyatt Metal & Boiler Works, Dallas.

* * *

Irving E. Welch, Detroit, sales representative for 15 years of the Wilmington Fibre Specialty Co., resigned recently to become associated with the Paragon Die Casting Co., Chicago. Mr. Welch's offices are at 81 Stephenson building, Detroit.

* * *

Thomas O'Neil, for ten years manager of eastern sales of the Milwaukee Corrugating Co., Milwaukee, has resigned to become affiliated with the Penn Metal Co., Parkersburg, W. Va., as eastern district sales manager. His territory will extend from Washington to Hartford, Conn.

* * *

L. E. Howe has joined the sales organization of the Brainard Steel Corp., Warren, O. Mr. Howe resigned from the sales department of the Acme Steel Co., Chicago, with which company he has been affiliated for several years. He will open sales offices in Chicago with the Brainard Corporation.

* * *

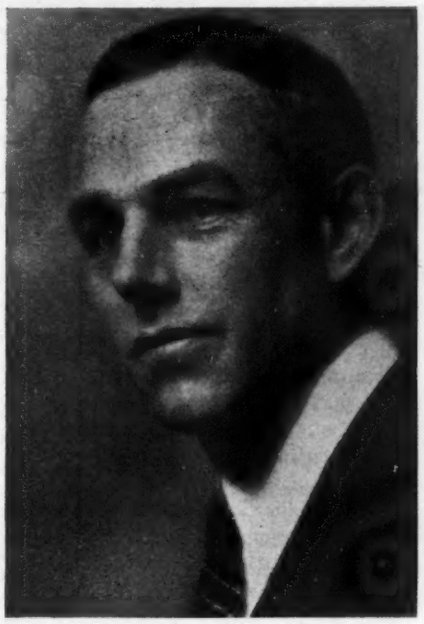
Frederick Alan Schaff has been elected president of the Superheater Co., 17 East Forty-second street, New York, to succeed George L. Bourne, recently elected chairman of the board. Mr. Schaff was born at Nelsonville, O., May 24, 1884, and was graduated from Purdue university in 1907. He spent several years in the mechanical department of the Boston & Albany and New York Central railroads and then went to Texas in charge of business interests. In 1913 he became identified with the Superheater Co.'s service department and two years later was elected vice president, in which office he served until his election to the presidency.

* * *

Edward W. Smith has been appointed general manager of sales of the Pittsburgh Steel Co., Pittsburgh, effective Feb. 1, to succeed George W. Jones, retired on account of ill health. Mr. Smith began his business career with the Pittsburgh Steel Co. 26 years ago, and since that time has served in different capacities, chiefly in connection with the sales department, marked by repeated promotions. For many years he has interested himself particularly in the economic aspects of business and has made intensive study of manufacturing, distribution and sales of steel products. He is widely known among the trade and is identified with the work of various associations for the advancement of the industry.

* * *

Walter B. Dodge, assistant to E. C. Waldvogel, for several years vice president in charge of sales of the Yale & Towne Mfg. Co., Stamford, Conn., handling equipment, locks, builders' hardware, etc., has been appointed manager of all hardware sales, due to the partial retirement April 1 of Mr. Waldvogel, connected with the company for 25 years. Mr. Waldvogel desires to relinquish some of the responsibilities of his office. He will continue in an advisory capacity, holding the office of vice president and remaining as a director. Mr. Dodge became identified with the company 24 years ago; his duties have been diversified and numerous and his advancement in sales work has been rapid.



JAMES C. MORGAN

James C. Morgan who ten years ago became affiliated with the company, has been placed in charge of all material handling equipment sales, including chain blocks, electric hoists, industrial trucks, hand lift trucks, skid platforms, etc. He previously had been with the C. W. Hunt Co.

* * *

Alexander Warden, formerly controller of the Van Sweringen railroad interests, Cleveland, has been elected treasurer of the Cheney Bigelow Wire Works, Springfield, Mass.

* * *

Harry Gillett, formerly president of Holorib Inc., Cleveland, has been

elected vice president of the Detroit Steel Products Co., Detroit, following the acquisition of the Holorib company by the Detroit company.

* * *

A. W. Remensnyder, formerly assistant treasurer of the Duquesne Steel Foundry Co., Pittsburgh, was elected treasurer at the recent meeting of the board of directors.

* * *

C. E. Stine, of the Detroit office of the Reliance Electric & Engineering Co., Cleveland, has been appointed to take charge of the Toledo, O., office, recently established.

* * *

Daniel A. Daly, formerly associated for many years with Standard Steel Sections Inc., New York, has resigned to become head of the Steel Trade Credit association of that city.

* * *

E. J. Kulas, president of the Otis Steel Co., Cleveland, for the past two years, will continue in that office until Feb. 1, 1931, under a renewal of his contract.

* * *

Edwin A. Jones, treasurer of the Globe Iron Co., Jackson, O., has also been appointed general manager, in order to relieve his father, John E. Jones, of some official responsibilities. He has been assistant general manager for some time. The elder Mr. Jones continues as president.

* * *

B. Schneider was elected president of the Harmony Foundry Co., Belleville, Ill., at the Jan. 21 meeting of the board of directors. E. Wiechert was named vice president, Frank Schroer secretary, Frank Schaefer treasurer, and William Kaoesberg general manager.

* * *

Theodore L. Dodd, operating as Theodore L. Dodd & Co., 80 East Jackson boulevard, Chicago, has been appointed sales representative for the Chicago district of the Massillon Rivet & Mfg. Co., Massillon, O., manufacturer of U-bolts, clip bolts, rivets, etc.

* * *

C. C. Abbott has been appointed assistant district sales manager at Philadelphia, for the Weirton Steel Co., Weirton, W. Va., serving under L. P. Lane, Philadelphia district sales manager. Mr. Abbott previously had been connected with the Weirton Steel Co.'s New York sales organization.

* * *

Joseph L. Auer resigned recently as machine shop superintendent of I. P. Morris & De La Vergne Inc., Richmond and Norris streets, Philadelphia, manufacturer of hydraulic turbines, valves and pumps, diesel engines, etc. His duties have been taken over by N. H. Schwenk, vice president in charge of operations.

* * *

J. F. Donahue, who, as noted in IRON TRADE REVIEW of Jan. 9, was elected vice president, member of the executive committee and director of the Lamson & Sessions Co., Cleveland, which recently acquired the Foster Bolt & Nut Mfg. Co., Cleveland, has also been made president of a subsidiary company incorporated in Ohio as the Lamson & Sessions Co., qualified to do business in Illinois.

* * *

A. C. Morse, for 15 years president

WALTER B. DODGE

and general manager of the Ohio Seamless Tube Co., Shelby, O., manufacturer of automobile and airplane parts, resigned at the annual meeting of stockholders Jan. 31. He was elected chairman of the board. Judge Edward Mansfield succeeds him as president, and Frank Benham as general manager. Other officers were re-elected.

* * *

E. O. Shreve, manager of the industrial department, General Electric Co., Schenectady, N. Y., since March, 1926, was appointed assistant vice president on the staff of J. G. Barry, vice president of the company. Mr. Shreve has been with the company 25 years.

William W. Miller, assistant manager of the industrial department and with the company since 1897, has been appointed to succeed Mr. Shreve.

* * *

E. E. Le Van was appointed general sales manager of the Haynes Stellite Co., New York and Kokomo, Ind., unit of the Union Carbide & Carbon Corp. at a recent meeting of the board of directors.

J. H. Maguire was appointed works manager, F. T. McCurdy plant superintendent, J. R. Brown, F. L. Secord and Everett Page assistants to Mr. McCurdy, and L. H. Brown research engineer.

* * *

Leonard C. Hanna, director of M. A. Hanna Co., Cleveland, was elected trustee of Lakeside hospital, Cleveland, for a 5-year period, replacing Crispin Oglebay, resigned Jan. 1.

* * *

E. B. Langenberg, formerly vice president, has been elected president of the Langenberg Mfg. Co., St. Louis. He succeeds George F. Langenberg, his father, who becomes chairman of the board. John J. Walsh, formerly secretary, was elected vice president. Mr. Langenberg is widely known in the warm-air heating industry, having been for three years president of the National Warm Air Heating and Ventilating association, and at present is a director.

* * *

George T. Rosselle, manager of the Tiffin, O., plant, Webster Mfg. Co., Chicago, engineer, founder and machinist, Jan. 29 was elected a vice president and has been transferred to the Chicago office.

Merton W. Myers, office manager at Tiffin, was appointed manager to succeed Mr. Rosselle.

Other officers elected are: A. T. Perkins, president; Mr. Rosselle, F. C. Harper and D. P. McPherson, vice presidents; Charles Clarke, secretary-treasurer; H. E. Byrne, assistant secretary. Ralph D. Sneath and William H. Kilbow, Tiffin, and John Kiskadden, Detroit, were elected members of the executive board.

* * *

Max A. Berns, publicity manager of the Universal Atlas Cement Co., Chicago, subsidiary of the United States Steel Corp., Jan. 27 was re-elected chairman of the advertising council of the Chicago association of commerce. Mr. Berns has been active in promoting movements for winter building, fire-safe construction, grade separations, and wider roads and streets. He is a member of the executive committee of the Chicago association of commerce, member of its general publicity committee, director of the Chicago better business bureau and is a member of the advertising committee of the Steel corporation. He was associated for 16 years with the Universal Portland Cement Co., with which the Atlas Portland Cement Co., recently was joined.

Obituaries

EDWARD LODER WHITTEMORE, chairman of the board of the National Malleable & Steel Castings Co., Cleveland and Indianapolis, died suddenly of heart trouble at his home in Cleveland Heights, O., Jan. 29. He had spent the previous day at his office and had retired the night before apparently in good health, but died without awakening. Burial took place at Rye, N. Y,. where he was born, Sept. 12, 1861. He was educated at Adelphi academy and Polytechnic institute, Brooklyn, N. Y., and later at Park institute, Rye, from which he was graduated in 1879. He also was graduated in 1882 from a scientific and technical course at Sheffield Scientific school, Yale university.

Mr. Whittemore began his business career in the office of the Bridgeport Malleable Iron Co., Bridgeport, Conn., remaining for five years. In 1887 he was elected secretary and treasurer of the Indianapolis Malleable Iron Co., Indianapolis, and took charge of the plant. In 1890 he became manger of the Toledo Malleable Iron Co., Toledo, O., and for a time had charge of both Indianapolis and Toledo plants. In 1891 the National Malleable Castings Co., Cleveland and Chicago, was merged with the Indianapolis and Toledo Malleable Iron companies, with main headquarters in Cleveland. In 1913, Mr. Whittemore became chairman of the board of directors. He was also a director of the Interlake Iron Corp., Cleveland; Eastern Malleable Iron Co., Naugatuck, Conn., and Parsons & Whittemore Inc., paper exporter and importer, New York.

* * *

P. L. Sowersby, 47, Cleveland manager of Crane Co., Chicago, died Jan. 29, after a two weeks' illness.

* * *

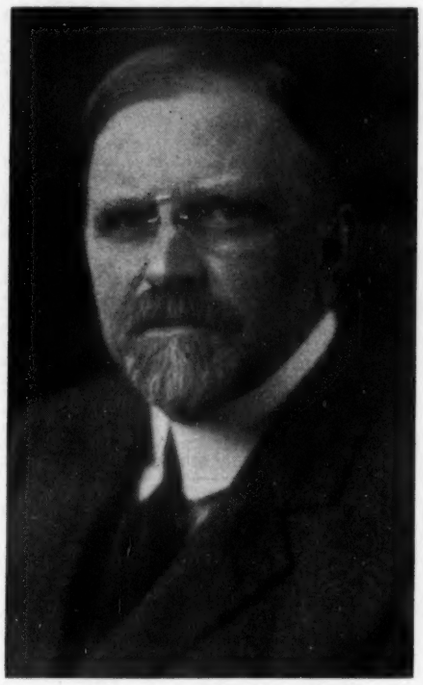
Frank H. Guppy, 50, secretary of the Superior Steel Products Co., Monaca, Pa., and formerly secretary of the Moltrup Steel Products Co., Beaver Falls, Pa., died Jan. 30.

* * *

J. H. Peckham, New Haven, Conn., for 10 years salesman for Henry Prentiss & Co., machine tool dealers, New York, died at his home, Jan. 22, following a brief illness from blood poisoning. Mr. Peckham was connected with the Hartford, Conn., office of the company. Before his connection with the Henry Prentiss sales force, Mr. Peckham was with the Norton Co., Worcester, Mass., having entered the machine tool business with that organization.

* * *

Harry T. Hall, 50, director of the Ralston Steel Car Co., Columbus, O., and vice president of the Bank of



EDWARD LODER WHITTEMORE

Manhattan Trust Co., New York, died unexpectedly in Chicago, Feb. 1, of a heart attack. Burial took place at East Liverpool, O.

* * *

Edward J. Bowen, president of the Union Tank & Pipe Co., Los Angeles, whose sudden death in an airplane accident, was reported in IRON TRADE REVIEW of Jan. 23 also was identified with the Pacific Wire Rope Co., Los Angeles and San Francisco.

* * *

Charles G. Wade, 69, consulting engineer, who in the past had been connected with Allis-Chalmers Mfg. Co., and the Falk Corp., Milwaukee, died recently at his home in Milwaukee. Mr. Wade also had practiced his profession in Milwaukee, Kansas City and Denver.

* * *

Arthur B. Caldwell, 71, vice president and treasurer of the Van Camp Hardware & Iron Co., Indianapolis, died recently. He entered the service of the company when 19 years old, continuously working for the same organization 52 years and advancing steadily to an executive position.

* * *

James A. Daniel, 77, pioneer shipbuilder, died Jan. 31 at Amherst, O. For 35 years, until his retirement a few years ago, he was superintendent of drydocks of the American Shipbuilding Co. at Lorain, O., in charge of all launchings. Prior to going to Lorain, he was for ten years with the Cleveland Shipbuilding Co., Cleveland.

* * *

John W. Ryan, 85, who has been retired from active connection with the steel business since 1911, prior to which time he was employed for 46 years by the Cleveland Rolling Mills Co. and later by the United States Steel Corp. as roll designer, died Jan. 30 at his Cleveland home.

* * *

Herman C. Burger, 69, Philadelphia, designer and maker of highly specialized instruments, died in that city, Jan. 29. Instruments used by Rear Admiral Peary on his North Pole expedition and the special transits for the construction of the Trans-Siberian railroad were personally tested and approved by Mr. Burger before delivery. Mr. Burger at the time of his death was vice president of Heller & Brightly Inc. Previously he had been shop superintendent of Queen & Co.

* * *

Fred F. Bixby, 65, manager of the material department of the American Car & Foundry Co., St. Louis, was asphyxiated by carbon monoxide in his garage in St. Louis last week. Mr. Bixby was a native of Adrian, Mich. His first business connection was with the Missouri Pacific railroad. After service with other railroads, in 1899 he was appointed a district manager of the American Car & Foundry Co., and retained his connection with that company until his death.

* * *

Frank J. Brittingham, 46, Pittsburgh district manager of the Cleveland Crane & Engineering Co., Wickliffe, O., died Jan. 27 in Pittsburgh. He was born in Michigan City, Ind., and after graduating from Purdue university with a degree in electrical

(*Concluded on Page* 130)

Current Statistics of Industry

Overhead Crane Business Doubles in 1929

New York, Feb. 4.—The value of electric overhead crane orders in 1929 was nearly double that of 1928, according to figures just compiled by the Electric Overhead Crane institute. Shipments increased in value more than $5,000,000. Units ordered and shipped increased materially. Orders were received in 1929 for 1689 units valued at $14,618,319.45 against 1077 units in 1928 valued at $7,598,-421.83. Shipments were 1565 units with a value of $12,290,629.05 last year, compared with 1024 units valued at $7,164,479.17 for 1928.

Barrel Output Rises

Washington, Feb. 4.—December, 1929, production and shipment of barrels increased over November, and were higher than the same month last year, according to department of commerce figures. Production was 54.7 per cent of capacity, compared with November's 50.8, and December, 1928, production of 47.1. Figures, as reported by 27 companies operating 31 plants, follow:

			Unfilled orders for delivery	
1928	Production	Shipments	within 30 days	beyond 30 days
Dec.	551,113	549,913	246,460	1,110,983
Total (year)	7,397,785	7,403,726	.....	.....
1929				
Jan.	558,492	548,581	319,704	1,342,006
Feb.	567,398	563,532	345,365	1,198,481
March	742,165	743,407	393,941	1,076,317
April	771,584	775,481	333,614	935,430
May	836,532	834,699	316,882	899,090
June	774,853	779,567	644,079	904,920
July	790,175	782,411	377,855	994,842
Aug.	806,574	809,860	358,150	847,509
Sept.	663,531	653,890	302,632	768,518
Oct.	629,976	638,681	298,550	603,071
Nov.	572,621	567,257	285,295	708,306
Dec.	624,365	618,003	294,797	1,044,136
Total, (year)	8,338,266	8,315,369	.....	.....

Boiler Orders Lower

Washington, Feb. 4.—In December, 1929, new orders for 1021 boilers were placed, totaling 864,896 square feet, according to the department of commerce. This compares with 1239 boilers and 1,160,246 square feet for the preceding month. Totals for 1929 show 18,518 boilers with 19,453,258 square feet ordered, comparing with 19,672 boilers having 17,684,811 square feet, in 1928.

Furniture Orders Off

Washington, Feb. 4.—December, 1929, shipments of steel furniture decreased still further from November, and were also perceptibly less than December, 1928. Year totals were also less in 1929 than in 1928, department of commerce figures show. Monthly figures follow:

	Business Group		Shelving	
	Orders received	Shipments	Orders received	Shipments
1928	(In Dollars)			
Dec.	3,610,645	3,117,139	828,555	791,376
Total	35,974,117	35,043,412	9,601,032	9,297,078
1929				
Jan.	3,892,651	3,614,961	1,099,575	901,970
Feb.	3,060,290	3,242,581	919,557	974,305
March	2,883,716	2,923,363	1,145,632	1,109,876
April	2,880,395	2,844,938	1,095,329	1,131,362
May	2,814,423	2,783,992	1,120,990	1,989,120
June	2,521,630	2,573,674	958,866	920,355
July	2,559,991	2,624,552	939,057	867,496
Aug.	2,417,725	2,482,594	931,468	889,947
Sept.	2,290,133	2,333,984	879,610	842,635
Oct.*	2,842,486	2,983,615	927,578	979,236
Nov.	2,900,452	2,631,079	801,223	859,697
Dec.	2,583,220	2,781,610	735,452	856,011
Total (year)	31,070,147	34,038,608	11,554,337	11,322,010

*Revised.

Steel Castings Rise

Washington, Feb. 4.—Bookings for steel castings in December, 1929, rose over November, and were at about the same level as December, 1928, according to department of commerce. Totals for the year show a gain over 1928 in all but bookings for railway specialties. Figures by month follow:

	—Bookings—		——Production——	
1928	Total net tons	†Railway specialties	Total net tons	†Railway specialties
Dec.	96,373	43,928	82,203	26,484
Total, (year)	1,000,283	389,863	1,021,956	371,564
1929				
Jan.	124,313	64,809	93,413	35,689
Feb.	115,639	58,903	97,568	40,282
March	130,836	60,743	115,163	49,562
April	144,616	75,625	121,941	53,458
May	113,329	44,919	127,189	58,636
June	95,201	34,947	116,221	54,154
July	103,356	37,731	118,100	51,989
Aug.	98,697	35,906	118,458	50,548
Sept.	85,859	33,463	106,268	44,609
Oct.	134,183	72,379	119,382	49,917
Nov.*	97,001	41,763	109,319	50,414
Dec.**	185,940	33,615	102,023	33,807
Total (year)	1,328,970	594,803	1,345,045	573,065

*Revised.
**Preliminary.
†For tonnage of miscellaneous castings deduct railway specialties from the total.

Sir David Bulmer invented a machine for cutting nail rods in 1617.

River Shipments for 1929 on Level With 1928

Pittsburgh, Feb. 4.—River shipments of iron and steel products in the Pittsburgh district during 1929 were approximately the same as during 1928, according to the United States engineers' office here. The combined movement over the Monongahela and Ohio rivers was the highest in history, although shipments over the latter declined from the 1928 total. The aggregate for the three rivers, including the Allegheny, was 2,419,246 tons, compared with 2,419,936 tons in 1928.

The 1929 total for the Allegheny was 2507 tons, against 8303 tons in 1928. The Monongahela's tonnage of 1,203,827 compares with 1,170,975 tons in the preceding year. The movement over the Ohio declined from 1,240,658 tons in 1928 to 1,212,912 tons last year. Monthly figures follow:

1929	Allegheny	Monongahela	Ohio
January	.....	80,402	48,471
February	.....	83,358	72,203
March	25	93,627	92,040
April	210	99,067	105,472
May	525	88,340	102,162
June	723	116,157	116,679
July	25	109,051	102,963
August	100	134,426	137,734
September	.....	135,773	150,163
October	.....	119,380	119,129
November	500	83,189	88,011
December	400	60,957	77,885
Total	2,507	1,203,827	1,212,912
1928			
January	330	78,069	69,750
February	385	73,360	87,635
March	725	77,908	77,945
April	470	87,581	110,356
May	1,863	86,722	112,818
June	2,350	75,422	96,156
July	.....	91,834	90,145
August	50	109,738	124,751
September	200	136,227	125,062
October	1,130	131,281	130,808
November	800	143,238	137,019
December	.....	79,595	78,213
Total	8,303	1,170,975	1,240,658

Export Managers To Meet

The Export Managers club of New York will hold its tenth annual meeting March 18, at Hotel Pennsylvania, New York. These meetings steadily are becoming more popular, some 700 having attended last year. The club is made up of export executives, bankers, shippers, advertisers, educators and others in similar lines. An all-day program closing with a banquet has been arranged. Possible development of foreign trade and opening of new markets will be discussed.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

NORTON CO., Worcester, Mass., is having plans prepared for a grinding wheel manufacturing plant at Welwyn, Garden City, Hertfordshire, Eng. The plant will occupy a site of 11 acres and consist of a power house, kiln building, four-story manufacturing building and a two-story building for inspection, shipping and offices. The buildings will give about three acres floor space. The Norton Co. is erecting a service building at Turner avenue and Forty-seventh place, 121 x 221 feet, one story, with provision for two and three-story additions later.

* * *

WILKENING MFG. CO., Philadelphia, manufacturer of piston rings, has established a plant at Toronto, Ont., to manufacture for the Canadian and export trade.

* * *

RELIANCE ELECTRIC & ENGINEERING CO., Cleveland, has moved its Pittsburgh office to 2300 Koppers building. B. J. Ballard continues as district sales manager and C. V. Gregory as assistant.

* * *

ADVANCE-RUMELY CO., Laporte, Ind., and Allis-Chalmers Mfg. Co., Milwaukee, are negotiating for acquisition of the former by the latter. Both companies manufacture heavy machinery and tractors.

* * *

KOPPERS CO., with executive offices at 120 Broadway, New York, is to move to the twenty-fifth floor of the Lincoln building, nearing completion at 60 East Forty-second street, that city.

* * *

READING IRON CO. district office at Tulsa, Okla., has been moved from the Hunt building to 609 Exchange National Bank building. O. M. Cullum is manager oil country sales and M. R. Putnam is district sales manager.

* * *

RLAVIN & SON, 2511 West Twenty-first street, Chicago, nonferrous metals and producers of ingot brass, have purchased the former Barton Steel Co. plant at 3426 South Kedzie avenue, Chicago, from the Scott-Weiss Steel Co., which acquired it in a master's sale in federal court Dec. 7. The former Barton plant embraces about four acres and includes buildings housing a rolling mill, warehouse and offices, with a total area of about 75,000 square feet.

* * *

ATLAS CAR & MFG. CO., Cleveland, has appointed Goggin & Mills, 5 South Wabash avenue, Chicago, its representatives for the sale of industrial equipment, industrial storage battery and trolley locomotives, trucks and tractors, industrial cars, track and turntables.

* * *

CHATTANOOGA STOVE & FOUNDRY CO., Chattanooga, Tenn., J. B. Abshire, president, and F. F. Barnes, vice president, which was formed recently to manufacture ranges and heaters, will build a plant at East Forty-third street and the Belt railroad. Production is planned to start July 1.

* * *

WOOD HYDRAULIC HOIST & BODY CO., Detroit, has bought the Hydraulic Hoist Mfg. Co., St. Paul. The name will be changed to St. Paul Hydraulic Hoist Co. and it will be continued under the same policy and management. Plans are being made for construction of an addition for the manufacture of steel dump bodies.

* * *

NORTHERN CONVEYOR & MFG. CO., Janesville, Wis., has announced enlargement of its line of mining conveyors to include snow plows, snow loading equipment, mining machinery and flood control equipment. The plant was enlarged during the past year and plans are being made for further extensions of buildings and equipment. George R. Whitnall is secretary and treasurer.

* * *

HARRY W. LEIGHTON CO., 565 West Washington street, Chicago, has been incorporated to act as manufacturer's representative and will represent, among others, Cleveland Steel Tool Co., Cleveland; Buckeye Portable Tool Co., Dayton Pneumatic Tool Co. and Precision Gage & Tool Co., Dayton, O. Harry W. Leighton is president and treasurer and William E. Thurber vice president and secretary.

* * *

MAINTENANCE ENGINEERING CORP., 1400 Conti street, Houston, Tex., has been made representative by the Edward Valve & Mfg. Co., East Chicago, Ind., in El Paso territory, including New Mexico and western Texas.

* * *

ALLIS-CHALMERS MFG. CO., Milwaukee, has received an order from the Amtorg Trading Corp. New York, representing Soviet Russia, for tractors valued at $3,500,000. The contract calls for 1850 units and completion of delivery by March 10 is specified. Two thirds of the order consists of a light and medium duty tractor built in the Milwaukee works, the remainder being heavy duty crawler types manufactured in the Monarch division at Springfield, Ill. All will be equipped with electrical illuminating devices for night work.

* * *

LAKESIDE MALLEABLE CASTINGS CO., Twenty-third and Clark streets, Racine, Wis., has increased its capitalization from $100,000 to $200,000. The new issue will be used to acquire the business of the Wisconsin Malleable Iron Co., Milwaukee, the plant of which was damaged by fire several months ago. Since that time the Lakeside company has handled the Milwaukee foundry's contracts and other business. In addition to an office extension and enlargement of the pattern department, the Lakeside company is planning other improvements. W. V. Osborne is president of the Lakeside company.

* * *

CHAPMAN-STEIN CO., Mt. Vernon, O., is designing and constructing several installations of one-way-fired soaking pits, operating under patents taken out in this country by Fours-Stein, Paris, France. Corrigan, McKinney Steel Co., Cleveland, has just put in service a battery of recuperative pits, seven holes, each with capacity for eight to ten ingots. By-product coke oven gas is used for fuel. Bourne-Fuller Co., Cleveland, has started a five-hole pit of the same design except for the

use of a Blaw-Knox preheater in place of the refractory recuperators. Producer gas is used for fuel. Otis Steel Co., Cleveland, is building a battery of pits of the same design at its Riverside works.

* * *

CLEMENT K. QUINN & CO., Duluth, iron ore producers and sellers, have moved their branch sales office at Cleveland from 1050 to 1652 Union Trust building.

* * *

SABINE SUPPLY CO., Orange, Tex., has acquired property at Engelke street and Navigation boulevard, Houston, Tex., and will erect warehouse and office buildings.

* * *

UNION WIRE DIE CORP., New York, has opened a branch factory in Pittsburgh and will employ 200 persons. The company has branches in Hamilton, Ont., and Paris, France, with main offices in New York. Operations will be begun in the Century building, Pittsburgh.

* * *

PEERLESS STOVE & MFG. CO., Columbus, O., has bought a five-story building at 228 North Front street, which it has remodeled for its plant and salesrooms. The new plant gives double former floor space. C. L. Beverly and F. M. Beverly are owners of the business.

* * *

FERRO ENAMEL SUPPLY CO., Cleveland, has taken a contract from the Roberts & Mander Stove Co., Philadelphia, for an electrically heated continuous porcelain enameling furnace of large capacity. This is the thirty-first continuous furnace order within two years, six being repeat orders.

* * *

MANUFACTURERS' AND DISTRIBUTORS' PERMANENT DISPLAY, Detroit, has been organized in connection with activities of Convention hall, in which large exhibits are held. The display is situated in rooms facing two streets and office rooms or desk space are available for sales representatives desiring them. Full service is supplied.

* * *

HYATT & CO., Philadelphia, has been organized to do a jobbing and warehouse business in sheets, tin plate and roofing supplies. Headquarters and warehouse are at 926-8 Race street. Officers are: President, Nathaniel Hyatt; treasurer, G. F. Kessler; secretary, R. S. Arrison. P. J. Fleming is general manager of sales and also has charge of purchases. Among the organizers of the new company is H. S. Homan. All were identified with Gummey McFarland & Co., Philadelphia, prior to its inclusion in the Eastern Metals Co.

* * *

IRON FIREMAN MFG. CO., T. H. Banfield president, with plant and headquarters in Portland, Oreg., has purchased the Standard Equipment Co. plant at West 106th street and Lorain avenue, Cleveland, where all automatic stokers will be manufactured for territory east of Wyoming. Haskell Carter will be production manager in Cleveland.

* * *

PAXTON & VIERLING IRON WORKS, Omaha, Nebr., has elected officers as follows: President, A. J. Vierling; vice president, Louis Vierling; treasurer, B. J. Scannell; secretary, F. R. Vierling; directors, A. J. Vierling, F. R. Vierling, B. J. Scannell, F. H. Marsh, J. H. Merz, Omaha, and L. Vierling and C. J. Vierling, Chicago.

* * *

BILLINGS & SPENCER CO., Hartford, Conn., manufacturer of drop forged tools, drop forging machinery and hand-wrought iron, has opened an office and warehouse at 53 Warren street, New York, in charge of W. Roy Moore, metropolitan sales manager. A complete stock of all the company's products will be carried. Stock of the products of the Husky Corp., Kenosha, Wis., will be carried also, as sales representative.

* * *

KINITE CORP., Milwaukee, maker of alloy steel castings, bar stock and vanadium-nickel alloy, has taken over the foundry of the Owens-Illinois Glass Co. at Toledo, O., which will continue to produce its usual lines of castings for the Owens-Illinois plants in West Virginia. In addition it will serve customers in Detroit and Toledo with special castings of the alloys handled by the Kinite Corp. The Milwaukee foundry will continue as before.

* * *

FREYN ENGINEERING CO., Chicago, has taken several contracts recently for installation of its special equipment in iron and steel plants. American Steel & Wire Co. has contracted for installation of a blast furnace charging control system and a continuous stock line recorder, at its Central furnaces, Cleveland. Tokuyama Sheet Steel Co., Tokuyama, Japan, has bought two electric roll heaters. The Eastern Rolling Mill Co., Baltimore, has bought two additional electric roll heaters, making 21 used by this company. By-Products Coke Corp., Chicago, has bought two pressure burners for use on boilers, duplicating a recent order. National Tube Co. has bought three continuous stock line recorders, two for its National works and one for Lorain works. Carnegie Steel Co. has bought a second stock line recorder for its Edgar Thomson works and Pittsburgh Crucible Steel Co. has bought a recorder for its Midland furnace.

Obituaries

(*Concluded from Page* 127)

engineering in 1905, went to Pittsburgh and entered the apprenticeship course of the Westinghouse Electric & Mfg. Co. In 1909 he was transferred to Minneapolis but two years later of the Cleveland Crane & Engineering Co. and remained in that capacity he returned to Pittsburgh as manager until his death.

* * *

Robert C. Zannoth, 63, president and general manager of the Roberts Brass Co., which he founded in 1914, died Jan. 25 after a brief illness with heart trouble.

* * *

John Olle, 59, president of the Racine Brass & Iron Works, Racine, Wis., died Jan. 28. He was born in Racine and established the foundry in association with John Tooman in 1900.

* * *

Reginald H. Bulley, 76, retired chemical engineer, designer and builder of the Halcomb Steel Works at Syracuse, N. Y., died Jan. 27 at Cocoanut Grove, Fla. Mr. Bulley was said to have installed the first electric furnace in the United States.

* * *

C. A. Pennock, 60, whose death of heart failure in Baltimore, Jan. 27, was noted briefly in IRON TRADE REVIEW of Jan 30., was vice president and general manager of the Eastern Rolling Mill Co., Baltimore. He had spent his entire business career in the steel industry. Prior to 1906 he was with the Lukens Steel Co., Coatesville, Pa. In that year he resigned to become plant superintendent for the Lalance & Grosjean Mfg. Co., Harrisburg, Pa. In 1914 he became superintendent of the Massillon Rolling Mill Co., Massillon, O., and in 1916 he was appointed superintendent of the tin plate department of the Bethlehem Steel Co. at Sparrows Point, Md. In 1919 he made his connection with the Eastern Rolling Mill Co. as plant manager, being appointed vice president in charge of operations in 1927.

Rationalizing British Industries

Further Steps for Efficient Operation—Colvilles Take Beardmore's Plate, Shape and Rail Mills—Unskilled Workers' Wages Raised—Markets Quiet

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, Feb. 4.—(*By Radio*)—Further "rationalizing" of industry, as the British refer to consolidations for more efficient operation, features the news of the week. David Colville & Sons Ltd., manufacturers of iron and steel and finished products, have taken over the plate, structural shape and rail mills of William Beardmore & Co. Ltd., whose interests are largely in naval works and heavy engineering, effective Feb. 1.

An advance in wages of unskilled workers in the British iron and steel industry has been agreed to, in varying amounts from 24 cents to $1.21, weekly.

Pig iron demand is dull, exports from Middlesbrough being practically at a standstill, except for shipments due on contracts. Domestic buying is on a hand-to-mouth basis. The market for East Coast hematite is quieter. Middlesbrough steelworks are getting some orders but not enough for capacity operations. Galvanized sheets are steadier at £11 15s ($57.21). Inquiries are coming from India. Demand for tin plate is improving.

Belgian iron and steelworks are continuing negotiations and arrangements for a syndicate. The markets are quiet. A report from Paris states signs of improvement are appearing in domestic iron and steel demand, with exports dull. Berlin reports a small volume of sales to British and Japanese buyers.

British Steel Producers Find Market Better

BIRMINGHAM, Eng., Jan. 24.—(*European Staff Service*)—The year is opening quietly in the iron and steel trades. The quarterly meeting last week at Birmingham brought out little new business in any department and buying this week has shown a falling off. For the last few months pressure for foundry iron has been consistent at the Midland furnaces, but there are signs that consumers are not disposed to enter into fresh commitments before the revision of prices which falls due at the end of the month. No

Sterling $4.87

doubt they are anxious that pig iron producers should confirm the present basis and believe that by holding off they will achieve their purpose. Smelters themselves, however, consider it is not in their own interest to raise the price of iron and when the meeting takes place at the end of the month in all probability the present values will be confirmed. There has been no difficulty in disposing of foundry iron output but poor demand at the forges necessitates accumulation of forge material.

A contract valued at £100,000 for tram rails for the London county council has been divided between two Middlesbrough firms, Dorman, Long & Co. and the Cargo Fleet Iron Co. This will be welcomed in the north of England because in recent years many municipalities have decided to scrap their tramway system and rail makers in Middlesbrough and Sheffield have experienced a big falling off in consequence. The London Mid-

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, February 3	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3, Silicon 2.50-3.00	$17.65	3 12 6*	$16.07	3 6 0	$16.07	3 6 0	$17.53	3 12 0
Basic-Bessemer	16.68	3 8 6†	15.10	3 2 0	15.10	3 2 0	16.80	3 9 0
Hematite, Phosphorus 0.02-0.05	18.99	3 18 0	24.76	630*	.....	.....	17.78	3 13 0
SEMIFINISHED STEEL								
Billets	$29.83	6 2 6	$22.40	4 12 0	$22.40	4 12 0	$22.16	4 11 0
Wire rods	41.40	8 10 0	30.44	6 5 0	30.44	6 5 0	30.44	6 5 0
FINISHED STEEL								
Standard rails	$40.18	8 5 0	$31.66	6 10 0	$31.66	6 10 0	$31.66	6 10 0
Merchant bars	1.74c	8 0 0	1.16c	5 5 0	1.16c	5 5 0	1.16c	5 5 0
Structural shapes	1.68c	7 15 0	1.09c	4 19 3	1.09c	4 19 3	1.10c	4 19 9
Plates, ship, bridge and tank	1.79c	8 5 0	1.36c	6 4 0	1.36c	6 4 0	1.36c	6 4 0
Sheets, black, 24 gage	2.17c	10 0 0	2.31c	10 10 0	2.31c	10 10 0	2.33c	10 12 0
Sheets, galvanized, 24 gage, corrugated	2.55c	11 14 0	2.85c	12 18 9	2.85c	12 18 9	2.97c	13 10 0
Bands and strips	2.17c	10 0 0	1.24c	5 12 6	1.24c	5 12 6	1.23c	5 12 0
Plain wire, base	2.06c	9 10 0	1.54c	7 0 0	1.54c	7 0 0	1.54c	7 0 0
Galvanized wire, base	3.04c	14 0 0	1.87c	8 10 0	1.87c	8 10 0	1.87c	8 10 0
Wire nails, base	2.39c	11 0 0	1.54c	7 0 0	1.54c	7 0 0	1.54c	7 0 0
Tin plate, base box 108 pounds	$ 4.57	0 18 9	.....	.....	.....	.....	$ 9.25	1 18 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs			Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$17.65	3 12 6	$19.26	490(2)	$17.58	630	$20.31	85
Basic pig iron	16.68	3 8 6	20.63	525(1)	15.62	560	21.74	91
Furnace coke	4.38	0 18 0	6.60	168	6.28	225	5.14	21.50
Billets	29.83	6 2 6	24.37	620	24.83	890	28.91	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.51c	140
Merchant bars	1.76c	8 2 6	1.26c	700	1.17c	900	1.53c	141
Shapes	1.84c	8 10 0	1.26c	700	1.20c	925	1.50c	138
Plates, ship, bridge and tank	1.95c	9 0 0	1.43c	795	1.46c	1,125	1.71c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.61c	1,450	2.73c	2,100	2.43c	225
Sheets, galvanized 24 gage, corrugated	2.60c	12 0 0	3.55c	1,970	3.45c	2,650	3.78c	350
Plain wire	2.06c	9 10 0	1.94c	1,075	2.15c	1,650	2.43c	225
Bands and Strips	2.17c	10 0 0	1.39c	770	1.53c	1,175	1.77c	164

*Middlesbrough; †Basic ‡delivered; (1) Basic-bessemer (2) Longwy. British export furnace coke £0 17s 6d ($4.26) f. o. b. Ferromanganese £21 13s 0d ($105.44) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($73.05) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

land & Scottish railway has distributed among Teesside steel firms contracts for railway chairs valued at £50,000.

The manufactured steel trade of Middlesbrough is busy on contracts and makers take an optimistic view of the outlook although new business is not offering freely. The output of steel ship plates is on a large scale and demand for constructional steel is maintained, while rail makers are busy. Midland constructional engineers who normally place their orders with firms on the Northeast coast have not been in the market since the advance in price a month ago. They were well aware that a rise was contemplated and not only did they cover forward requirements but added the extra cost of steel in tendering for contracts.

The structural yards in the Midlands have enough on hand to keep the employes at work but there are no big contracts involving 1000 tons or more. Some time ago there were a good many inquiries for cinema construction but these are now less frequent, demand having been satisfied. Prices are finely cut in the structural business. The number of firms in the trade is larger than ever and profits are reduced to a meager level.

A strong tone prevails in the east coast hematite trade, and the Consett Iron Co. is relighting one furance of a modern type. Fairly good order books are held although cheapness of hematite on the Continent has cut off certain markets formerly of great value to makers on the east coast. On the west coast hematite makers are recovering ground lost over the holidays and with a more frequent flow of orders the stocks that accumulated are now being disposed of. Demand, however, does not justify additions to the twelve furnaces in blast between Ulverston and Workington. Rail and hoop mills at Barrow are fully employed and at Workington orders on books warrant about nine weeks' activity.

In Staffordshire finished iron, a satisfactory business is being negotiated in marked bars, but the lower grades of iron sell slowly at an unremunerative price. So much foreign material is coming in in the way of Belgian No. 3 iron and steel bars that Staffordshire makers of nut and bolt iron cannot hope to compete. Small sales are made where the purchaser is willing to pay the high price. Staffordshire wrought iron has a high reputation for resistance to corrosion and long life and purchasers who can afford to pay for quality do not hesitate to use this iron. Merchants selling Continental material report a quiet trade. There does not seem to be any deviation from the rates laid down by the cartel, although business has been so slow since the turn of the year that it is difficult to test values. Some big inquiries are said to be in the market for 2-inch billets at £5 10s ($26.83) delivered in the Black Country.

Under the rationalization scheme being carried out in the steel industry the Penistone steel works in Yorkshire is closing down. The English Steel Corp. acquired this works from Cammell, Laird & Co. some time ago but under the aims of the merger several works are doomed. The whole object is the concentration of production in those places where it can most economically be carried out. Economies will thus be effected including the saving of rates and a general reduction in overhead charges on industry. It is hoped by this means to lower costs of production sufficiently to place the steel trade on a sound basis to meet competition from other countries.

Recast European Steel Entente To Control Sales, Prices, Tonnage

LONDON, Jan. 21.—(*European Staff Service*)—While negotiations are being conducted with a view to a complete reorganization of the European steel entente and the various syndicates are being pursued, an article published in the French *Usine* of Jan. 17 is of interest, as it tends to show the attitude of a large number of French steelmakers toward the future organization of the cartels.

The article emphasizes the importance of the recent formation of a Belgian national steel syndicate, and it is stated that this will greatly facilitate further negotiations, since each country interested will now have a national organization.

It is forecast that international selling syndicates may be definitely constituted by the middle of the year. When these international selling syndicates are definitely formed, continental iron and steel works will be linked into one large organization where production, sales and prices will be strictly controlled. The whole organization will be under the supervision of the renewed European steel entente. The entente will control an output of raw steel of 36,000,000 tons per year, and it will represent an aggregate capital of 60,000,000.000 francs ($2.350,000,000), this, of course, representing the aggregate capital of all the continental iron and steel-making concerns which will be members of the entente.

When the reorganization of the entente is completed, the European entente will exert its influence on all export markets. The article goes on to say that while American production attains 55,000,000 tons of steel, the distribution of this output will be more or less confined to the American continents, while that part of the production of the members of the European steel entente available for export will be directed in all the world's markets. The entente will have under its jurisdiction a number of existing export organizations which already have representatives and branches in many parts of the world. In conclusion it is stated that it is impossible that the policy which will be followed by the entente should not exert a world influence on the iron and steel trades.

The possibilities of such an organization have naturally attracted the attention of the considerable number of independent export concerns and merchant firms, and they are looking upon this development with considerable anxiety, as they fear that any possibilities of business being done by private firms will be completely done away with. A delegation composed of representatives of a number of these export concerns will meet the representatives of the steel entente, and it is believed that some arrangement will be arrived at. However, if the entente is reorganized on the new lines, private exporting firms will undoubtedly, lose business, and consumers also will lose the opportunity of personal contact, since any important orders will have to be forwarded to the various selling offices instituted by the entente and its subsidiary organization.

The plan, as set forth in the abovementioned article, is extremely ambitious, but present indications tend to show that during the course of this year the continental iron and steel works will, undoubtedly, be much more strongly united than in the past. It also is of particular interest to note that there is no likelihood at present that British steelworks will join the entente, but should the plans mentioned above materialize, there is little doubt that the British works would have to take them into account, and that further developments in that direction might occur.

Belgian Steelmakers in Sales Agreement

London, Jan. 24.—(*European Staff Service*)—Belgian iron and steelmakers have decided upon an action which should facilitate negotiations regarding the reorganization of the European steel entente and the various other international syndicates. Belgian steelworks have concluded a national agreement with a view to dividing orders and controlling prices. The agreement was signed Jan. 15 and will hold good until July 8, when it is expected that a definite selling syndicate will have been organized.

Until that time, consumers can pass their orders direct to the works, but the works will have to send a statement of orders received to the central office, which statement must be issued two or three times a month.

If one works appears to have considerably more orders on its books than certain other works, it will be invited to increase its prices, and if that measure is not sufficient to divert orders to other works, the firm in question will be asked to pass a certain volume of its orders to other works not so well favored.

There will be two controlling offices, one at Charleroi and the other at Liege. The quota of each works has been based on the production of the 22 months from Jan. 1, 1928, to Oct.

31, 1929. All steel products are included in the agreement, except those already controlled, as is the case for rails and wire rods, and also to the exclusion of medium and small-gage sheets, since there are few producers of these commodities and they generally agree among themselves. Negotiations are being carried out for reorganization of the hoop and band syndicate.

The above arrangements are provisional until the final constitution of a syndicate, which then will fix prices and allocate orders. When this syndicate is formed, all orders will be centralized at the office of the syndicate.

These steps, as soon as they were known by the exporting and merchant firms, created considerable excitement, and these merchants and exporters are naming a number of representatives to discuss the new state of affairs with representatives of the works.

Belgian Iron Exports Make New Record

Brussels, Jan. 21.—(*European Staff Service*)—Exports of pig iron from Belgium and Luxemburg during November, 1929, were the highest figure reached to date. Exports of other iron and steel products were at a low mark. The principal items exported in November were: structural steel, 54,969 tons; plates and sheets, 47,295 tons; semifinished steel, 38,935 tons; wire, 33,131 tons; rails, 11,790 tons; hoops, 11,496 tons. The amount of scrap exported was 26,307 metric tons.

Imports of iron and steel products other than pig iron were the lowest for the year. Comparisons follow, in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron	Other iron and steel	Pig iron	Other iron and steel
1926	27,505	28,000	13,105	305,000
1927	31,760	28,000	11,350	388,000
1928	45,910	38,000	8,240	380,000
1929				
Jan.	51,705	46,000	7,804	269,000
Feb.	37,571	40,000	7,064	291,000
March	53,944	38,000	8,810	398,000
April	60,267	45,000	7,157	428,000
May	70,793	.....	.....	.....
June	58,414	31,000	9,666	646,000
July	74,570	41,000	7,931	359,000
August	57,189	35,000	12,457	362,000
Sept.	55,572	30,000	14,070	428,000
Oct.	54,046	33,000	11,866	420,000
Nov.	52,498	29,000	14,433	364,000

British Output Exceeds That of 1928

London, Jan. 20.—(*European Staff Service*)—Output of pig iron in Great Britain in 1929 showed an increase of 14.6 per cent over 1928. The highest monthly figure in 1929 was that of October. December output included 190,400 tons of hematite, 259,700 tons of basic, 144,300 tons of foundry and 24,700 tons of forge pig iron.

The output of steel ingots and castings in December, 1929, was the lowest for the year. The total for 1929 showed an increase of 13.2 per cent over 1928. The highest monthly production in 1929 was attained in October with 889,800 gross tons. The following table gives comparisons in gross tons:

(Gross tons)

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	*338	855,000	638,600
1926	78	204,800	299,700
1927	149	607,700	758,100
1928	132	550,900	710,400
1929	162	631,600	804,560
1929			
Jan.	139	563,900	764,600
Feb.	140	519,600	774,900
March	145	590,500	859,900
April	152	611,300	808,600
May	159	654,800	840,400
June	165	657,800	830,900
July	167	671,900	804,800
Aug.	170	682,000	753,300
Sept.	168	664,600	847,900
Oct.	166	688,700	889,800
Nov.	163	631,400	815,000
Dec.	162	643,000	661,200
Total (revised)		7,579,500	9,654,700

*Average for year.

British Prices Steady

London, Jan. 21.—(*European Staff Service*)—Board of trade returns for December, 1929, give the average British export prices per gross ton for certain iron and steel products.

Compared with those of the preceding month, prices in December, 1929, showed an increase for foundry pig iron, rails and plates, and a decrease for beams, black sheets, galvanized sheets and tin plate. In comparison with those of a year before, prices were higher for foundry pig iron, plates, sheets and tin plate, but lower for beams, rails and galvanized.

	£	s	d	$
Foundry pig iron	4	6	0	20.85
Beams	7	11	5	36.72
Rails	8	17	6	43.04
Plates	10	3	5	49.33
Black sheets	12	8	8	60.30
Galvanized sheets	15	6	6	74.32
Tinplates	19	17	9	96.45

Better Profits and More Power in German Steelworks Mergers

BERLIN, Jan. 20.—(*European Staff Service*)—Altogether, between 60,000,000 and 70,000,000 marks ($14,500,000 and $17,000,000) had to be spent to execute the amalgamations in the German iron and steel industry which have taken place during recent weeks, and which have resulted in a new increase of power of the heavy industries in Germany compared with that of the working-up industries, which only gradually seem to approach the unavoidable step of reorganization. The steel plants bought by a syndicate headed by Dr. Voegler, director-general of the Vereinigte Stahlwerke, are: Henrichshuette, Stahlwerke Becker, Gussstahlewerke Doehlen, Rheinisch-Westfaelische Stahl-und Walzwerke, Annener Gussstahlwerke, Storch & Schoeneberg, Bremer Huette, and the pipe department of Rheinmetall. Part of these plants is to be laid idle. The financing of these purchases will be done mainly by assessing 1 mark per ton of steel produced during the ten years' duration of the raw steel agreement. Apart from these purchases, there is the sale of the controlling majority of the Essener Pit Coal Co. to the Gelsenkirchen Mining Co.

Dividends in the heavy industry for the past year will be rather better than for 1928. According to preliminary estimates, the United Steel Works Co. is expected to distribute an unchanged dividend of 6 per cent, and Phoenix a dividend of 6.5 per cent; the Rheinische Stahlwerke may increase its rate from 6 to 7 or 8 per cent; the Concordia Mining Co. is expected to pay 6 per cent, and the Harpen Mining Co. may pay 8 per cent, whereas no dividend was declared by these two concerns in 1928; Krupp's is expected to pass its dividened again.

Recent reports on the occupation of the German iron and steel industry show a considerable decrease. The United Steel Works Co., which has just published its quarterly report for the three months ending Dec. 31, 1929, give a reduction of unfilled orders to 70.5 per cent of the monthly average of 1928-29. Its production and sales during that quarter as compared with the quarter ending Sept. 30, 1929, were as follows:

Production	Dec. quar.	Sept. quar.
	(Metric tons)	
Pig iron	1,657,442	1,680,436
Raw steel	1,705,526	1,695,920
Coal	7,350,730	7,413,940
Coke	2,657,190	2,709,629
	(Million marks)	
Domestic sales	217.3	256.0
Foreign sales	136.9	146.5
Turnovers	354.2	402.5

The figures reflect a small decline of exports, while domestic sales were reduced to a much larger extent on account of decreasing activity in Germany. Nevertheless, it should be mentioned that the figures also reflect a considerable resistance with regard to the decline in other industries.

Domestic business still is rather slack, although a revival is looked for, owing to the recent reduction of the Reichsbank rate by ½ to 6.5 per cent, while at the same time the mild winter has permitted continuance of building activities. So far the orders booked are limited. A small demand is registered for merchant bars, but unfilled orders are affording occupation for only about two weeks. Business in semifinished products is dull.

A slight revival of demand is registered in export business, although Japan and China are most reluctant. The Dutch East Indies are buying, and South Africa has bought rolled products. Bands have been bought at a better rate, but sales of merchant bars have not improved. Quotations for wire have been reduced, following reduction in quotations of western producers. Sales of semifinished products have not increased.

Machinery

Dullness Prevails but Optimism Pervades Outlook of Dealers—Grinders Scheduled To Go Up 10 Per Cent Feb. 10

AWARDS and inquiry register slight improvement over the dull market tone of the past few weeks. However, dealers refuse to be anything but optimistic and eagerly await a pickup in business after the first of March. A price increase of about 10 per cent is scheduled to go into effect Feb. 10 on several lines of grinders. Chicago, Milwaukee, St. Paul & Pacific railroad has completed its inquiry list which now includes about 50 items. Practically all types of metalworking machines are contained in this list. Western Electric Co. has issued a fair sized list; General Electric Co. is expected to do likewise shortly and Westinghouse also has a number of items pending. Deliveries on most all types of standard machines are regarded as normal.

New York, Feb. 4.—Machine tool equipment buying has increased slightly, according to most dealers and builders, including grinding machinery divisions. Inquiry has also been fair. Buying and pending business is well spread, orders being confined largely to one or two tools at a time. Prices are steady, despite keenness on the part of buyers to force concessions. Deliveries are generally back to normal with the exception of boring machinery which still is delayed. While the outlook is uncertain and considerable volume of equipment on inquiry is not expected to be closed until around March 1, a more optimistic view is taken by machine builders.

Western Electric Co. has issued a fair sized list. General Electric Co. soon will place a fair total, including lathes and presses. Machine shop trade is fair. One dealer sold an $11,000 milling machine, a $5000 tool and two radial drills in one day. Some of the small metalworking plants have inquiries out which in the aggregate make a fair total. Railroads are taking few tools. Southern New England and upstate New York appear more interested in new equipment than industries in the immediate New York territory. Automobile releases have been reflected in increased operations by ball bearing makers and producers of grinding equipment. A New England grinding machine plant has increased operating schedules slightly and reports new business in January slightly ahead of the previous month. Demand for machine motors is holding well and delivery is prompt.

Worcester, Mass., Feb. 4.—A price increase in grinders averaging about 10 per cent will go into effect Feb. 10. In that line, of all the machinery markets, considerable shipping is being reported along with a satisfactory number of new orders. Business in general is spotty with demand widely scattered.

Pittsburgh, Feb. 4.—Machine tool awards show little improvement over light activity of the past several weeks although some sellers report fairly steady demand for individual tools. Inquiry is less active following a fairly heavy volume during the first several weeks of January. The only large list pending is that of Westinghouse Electric & Mfg. Co., which has placed several tools against its first quarter requirements. Bethlehem Steel Co. has placed most of the tools for its Johnstown plant, while Carnegie Steel Co., which placed several items for Clairton a short time ago, will buy a few tools for its Duquesne plant shortly. Delivery by tool builders has improved considerably since the latter part of last year although on a few of the more popular items deferred shipments still are in effect.

Cleveland, Feb. 4.—January sales totals for most dealers and builders are satisfactory considering general business conditions, averaging about 20 per cent off from January, 1929. Single machines comprise the bulk of all business in this territory, although some foreign lists are receiving attention. A builder of screw machines reports a Russian inquiry of some size while a turret lathe builder sees bright prospects for business in France. Automotive business is quiet and there is some doubt as to whether much can be expected from this quarter for 1930.

Chicago, Feb. 4.—Inquiries for machine tools continue moderately active with sales in light volume. The position of the market is improved in that a number of buyers are showing more interest in projects that have been outstanding quietly for some time, and most of these inquiries that recently have become active probably will be closed shortly. Numerous scattered inquiries are reported. A northern Indiana automotive parts maker is expected to be in the market shortly. Santa Fe has ordered additional equipment, including some welding shop tools. A public service company purchased a pipe machine and several other tools. January's volume for most dealers was about 50 per cent under January, last year, although a few houses report totals not far behind December, or virtually equivalent. Chicago, Milwaukee, St. Paul & Pacific has completed its inquiry list of about 50 shop items. The list now includes three 4-foot radial drills, five 32-inch shapers, three 36-inch planer-shapers, 36-inch heavy duty shaper, one 30-inch and five 24-inch lathes, one 18-inch x 8-foot lathe, two 20-inch x 8-foot and one 22-inch x 10-foot lathe, one 4-inch and one 3½-inch turret lathe, one 20-inch sensitive drill, one pipe cutter, one boring mill, one universal milling machine, two 13-inch hack saws, one magnetic separator, one 24-inch disk grinder, one 39-inch crank planer, one bushing press, one 1100-pound steam hammer, drill grinders, one slip roll former, electric furnace and electric tool furnace, and a 90-inch journal turning machine. Deliveries on most machine tools now can be made in four to six weeks.

Convention Calendar

Feb. 7-8—American Society for Steel Treating. Semiannual meeting at Hotel Pennsylvania, New York. W. H. Eisenman, 7016 Euclid avenue Cleveland, is secretary.

Feb. 12-14—Engineering Institute of Canada. Annual meeting in Montreal. R. J. Durley, 2050 Mansfield street, Montreal, Que., is secretary.

Feb. 17-20—American Institute of Mining and Metallurgical Engineers. Annual meeting at Engineering Societies building, New York. Dr. H. Foster Bain, 29 West Thirty-ninth street, New York, is secretary.

Feb. 17-22—American Ceramic society. Thirty-second annual convention at Royal York hotel, Toronto, Ont. Ross C. Purdy, 2525 North High street, Columbus, O., is secretary.

March 3-7—National Industrial exposition. At Hotel Stevens, Chicago. George Pfisterer, 308 West Randolph street, Chicago, is secretary.

March 5-7—American Society of Mechanical Engineers. National meeting of materials handling division at Stevens hotel, Chicago. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

March 31-April 2—Concrete Reinforcing Steel institute. Sixth annual convention at Bon-Air Vanderbilt hotel, Augusta, Ga. M. A. Beeman, 2112 Tribune Tower, Chicago, is secretary.

April 5-9—American Society of Mechanical Engineers. Fiftieth anniversary celebration, April 5-6 in New York and Hoboken, April 7-9 Hotel Mayflower, Washington. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

April 7-12—American Oil Burner association. Seventh annual convention, and national oil burner show, Hotel Stevens, Chicago. Harry F. Tapp, 342 Madison avenue, New York, is secretary.

Ryerson Earnings Up

Annual report of Joseph T. Ryerson & Son Inc., Chicago, shows results in 1929 of cumulative gains in sales. Net earnings advanced 26 per cent. Gross sales were $34,111,083, an increase of $3,414,804, and net earnings, after all charges, were $2,308,084, or $5.77 a share. Current assets of the company of $13,097,437 are 8.21 times current liabilities.

The first furnace for melting tin was erected in 1680.

CONSTRUCTION *and* ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

NEW HAVEN, CONN.—Brock-Hall Dairy Co. Inc., 1204 Whitney avenue, is preparing plans for a 2-story repair shop and garage on Whitney avenue. R. W. Foote, 185 Church street, is architect.

SHELTON, CONN.—O. K. Tool Co. has awarded contract to Austin Co., 16112 Euclid avenue, Cleveland, for heat treating and manufacturing plant here to cost about $50,000.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids until Feb. 11, for lathes, drilling and tapping machines, and machine shop equipment.

WASHINGTON—Washington Air Terminal Corp., National Press building, has awarded the contract for the construction at Washington airport of a hangar and shop. (Noted Dec. 5.)

PORTLAND, ME.—Marine supply and iron warehouse of Bernstein & Jacobson Inc., was recently damaged by fire.

BEVERLY, MASS.—Reid Bros Co. Inc., Robert Reid president, recently incorporated to manufacture surface grinders, advises that a new plant will be leased at 140 Elliott street.

FOXBORO, MASS.—Foxboro Co., manufacturer of indicating and recording instruments, will take bids soon for alteration of plant and possible construction of 2-story plant addition.

NORTH ATTLEBORO, MASS.—North Attleboro Foundry Co. plant was recently damaged by fire.

NEWARK, N. J.—J. Weisberger, 73 Badger avenue, has plans for a 1-story, 135 x 185-foot machine shop at 183 Magra street to cost about $40,000.

TRENTON, N. J.—State board of education, State house, is having plans prepared for a power plant in connection with Trenton Normal school, Hillwood street and Pennington road. Cost will be about $40,000. Guilbert & Betelle, 20 Branford place, Newark, N. J., are architects.

ALBANY, N. Y.—Philfuels Co., manufacturer of liquid gas, General Motors building, Detroit, advises that general contract for construction of plant here to include pumping and heating units has been let to W. L. Gleason.

ALBANY, N. Y.—New York Power & Light Co., 126 State street, is receiving bids for the erection of a 3-story machine shop, garage and warehouse on Broadway. Stevens & Wood, 60 John street, New York, are architects and engineers.

NEW YORK—Ramp Realty Corp., 12 East Forty-first street, plans a workshop in connection with garage at Walton and 149th streets. Consolidated Telegraph & Electrical Subway Co., 54 Lafayette street, is architect and lessee.

RIVERHEAD, N. Y.—State, department of mental hygiene, Albany, N. Y., will receive bids until Feb. 19, for a power house at Pilgrim State hospital near here.

STATEN ISLAND, N. Y.—O'Brien Bros. Shipyard Corp., 233 Broadway, New York, plans construction of a shipyard, pier and drydock at Rosebank, N. Y., near here.

ALLENTOWN, PA.—Fairview car barn of Lehigh Valley Transit Co. was recently damaged by fire.

CORRY, PA.—Mead Boiler Works, East Main street, was recently damaged by fire.

ERIE, PA.—Odin Stove Mfg. Co., C. H. Hoffstetter president, has purchased the plant of the Erie Mfg. Corp., Thirteenth and Walnut streets, and advises that above plant will be transformed into a foundry.

MIDLAND, PA.—Mackintosh-Hemphill Co., maker of heavy machinery, Twelfth and Etna streets, Pittsburgh, plans extensions and improvement to plant here to cost about $85,000.

PHILADELPHIA—Philadelphia Mineral Flooring & Supply Co. plant and machinery at Aramingo and Tioga streets were badly damaged by fire recently.

PHILADELPHIA—Ajax Metal Co., 46 Richmond street, plans an expenditure of between $300,000 and $400,000 for plant extensions and improvements during 1930.

PHILADELPHIA—Ford & Kendig, sheet metal workers, 1428 Callowhill street, plan a 1 and 2-story manufacturing plant and warehouse, although architect has not yet been selected. L. M. Ford is president.

PHILADELPHIA—Pennsylvania railroad, Thirty-second and Powelton avenues, has closed bids on a 10-stall addition to engine house at South Philadelphia terminal yard. William H. Cookman, 420 West Price street, is architect.

TARENTUM, PA.—Tarentum Steel Corp., First National Bank, has had plans in progress for a sheet steel mill here but they will not mature until summer. (Noted Oct. 31.)

East Central

BELLEVILLE, ILL. — Belleville Stove & Range Co. plant was recently damaged by fire.

CHICAGO—M. Klein & Son, 3200 Belmont avenue, maker of linemen's tools, have been granted a permit for a 64 x 145-foot plant addition to cost about $26,000.

CHICAGO—Two-story plant building occupied by Yates-American Machine Co., Chicago Tool Co., and others, at Washington boulevard and Sangamon street was recently damaged by fire.

CHICAGO—Dallas Brass & Copper Co., 820 Orleans avenue, division of Revere Copper & Brass Co., advises it has placed general contract for plant construction at Grand and Natchez avenues with Dahl-Stedman Co., 11 South LaSalle street. (Noted Jan. 30.)

PEORIA, ILL.—Acme Iron & Metal Co. suffered a loss by fire when the block at 1800 South Washington street was damaged.

AUBURN, IND.—Rieke Metal Products Corp.,

maker of steel fittings for barrels, has plans for a plant enlargement and plans are now being prepared.

EVANSVILLE, IND.—Servel Inc., 51 East Forty-second street, New York, plans a plant addition here for the manufacture of gas refrigerators. Cost will be about $40,000.

FORT WAYNE, IND.—Getz Motor Co. is preparing plans through C. Weatherhogg, architect, 250 West Wayne street, for a 3-story machine shop and garage at Main and Fulton avenues.

GOSHEN, IND.—Combustioneer Inc., 1829 South Fifty-fifth street, Cicero, Ill., will move here about April 1, into a location at 1200 East Madison street, where automatic stokers will be manufactured. William L. Shoots is president.

INDIANAPOLIS—American Foundry Co., 531 South Warman street, was recently damaged by fire. Loss was estimated at $750,000.

INDIANAPOLIS—Ford Fence Co. Inc., 4247 Park avenue, recently incorporated, advises that no plant will be built for possibly a year. L. Roy Ford is president.

KOKOMO, IND.—Continental Steel Corp., 1108 South Main street, is building a new sheet mill addition here where cold rolling equipment will be housed.

LEBANON, IND.—Indestructible Wheel Co. plant was recently damaged in an accident affecting the boiler room.

MICHIGAN CITY, IND.—Metal Products Corp., recently incorporated, will erect a 1-story, 150 x 200-foot plant building at Tenth street and Sheridan avenue.

PLYMOUTH, IND.—Lee Body & Trailer Co. has private plans for a plant to cost about $46,000.

QUINCY, ILL.—Gardner-Denver Co., manufacturer of pumps, has purchased a ten-acre site opposite to present plant for expansion purposes.

DETROIT—O. & S. Bearing Co., maker of bearings and bushings, 303 Artillery street, has awarded contract to Austin Co., 16112 Euclid avenue, Cleveland, for office and plant building here.

MANISTIQUE, MICH.—Thomas Berry Chemical Co., damaged by fire last November, has plans to restore plant building to full capacity.

ST. CLAIR SHORES, MICH.—W. J. Lehner, city engineer, advises that contract for village pumping stations at Eleven mile road and at St. Gertrude station have been placed with William Benton, 3106 Gratiot avenue, Detroit.

CANTON, O.—International Steel Corp., 110 South Dearborn street, Chicago, will spend about $400,000 remodeling plant here formerly belonging to Canton Steel Foundry Co. Alexander Blackwood is general manager.

CINCINNATI—Lockwood Mfg. Co., 650 West Third street, maker of sheet metal specialties, awarded contract for 1-story plant building on Wasson road.

CINCINNATI—D. T. Williams Valve Co., Spring Grove and Townsend avenues, has been granted a building permit for a 1-story boiler house adjoining plant.

CLEVELAND—Austin Co., 16112 Euclid avenue, will make a large addition immediately to its fabricating plant on Chardon road.

CLEVELAND—Crucible Steel Casting Co., West Eighty-fourth street and Almira avenue, is receiving bids on the general contract for a foundry and storage building. G. S. Rider, Marshall building, is engineer and architect.

CLEVELAND—Iron Fireman Mfg. Co., Portland, Oreg., maker of automatic stokers, has purchased the Standard Equipment Co. plant at West 106th street and Lorain avenue here. Approximately $50,000 will be spent in remodeling, and equipment will be needed. Haskell Carter is local manager.

CLEVELAND—Hammond Mfg. Co., 7808 Kinsman avenue, manufacturer of drilling and tapping machinery, has awarded contract for 1-story plant addition, 75 x 124 feet, to R. E. Nixon, 10006 Carnegie avenue. Plant will be erected at 3889 East Eightieth street. (Noted Dec. 12.)

COLUMBUS, O.—Board of trustees, Ohio State university, care O. E. Steeb, secretary, proposes a steam generating unit for power plant of university.

DAYTON, O.—Brown & Brockmeyer Co., 10 Norwood avenue, manufacturer of electrical motors, will receive bids about March 15 for a 1-story plant addition. (Noted Nov. 21.)

IRONTON, O.—Ironton By-Product Coke Co. will add a 60-oven unit to its plant.

MIDDLETOWN, O.—American Rolling Mill Co. open-hearth laboratory on Curtis street was recently damaged by fire.

YOUNGSTOWN, O.—Electric repair shop of the Republic Iron & Steel Co. was recently damaged by fire.

EAU CLAIRE, WIS.—City, care O. E. Oien, clerk, is expected to place an appropriation ordinance before the common council for a new filtration plant to include pumping equipment. Alvord, Burdick & Howson, hydraulic engineers, 8 South Dearborn street, Chicago, have submitted preliminary plans.

LA CROSSE, WIS.—City, care J. T. Hurd, engineer, is receiving bids until Feb. 12, for furnishing and installing one 1400-gal. pump, motors and apparatus.

MANITOWOC, WIS.—Invincible Aircraft Corp. is making plans for a plant to manufacture airplanes, costing about $50,000.

MIDDLETON, WIS.—Bur-Hi Aircraft Corp. is reported planning construction of a plant addition to be about 40 x 120 feet.

MILWAUKEE—Stover Signal Engineering Co., manufacturer of auto lights, 252 Milwaukee street, had plant damaged by fire recently.

MILWAUKEE—G. H. Smith Steel Casting Co. is having preliminary plans prepared for a plant at Chase and Holt avenues. W. Stiemke, 500 Clinton street, is in charge.

MILWAUKEE—United States Engineer office, Federal building, is taking bids on two wood-boring drills, one rock drill, 12 miscellaneous drills and two wood-boring machines.

MILWAUKEE—International Harvester Co., care W. B. Swift, 606 South Michigan avenue, Chicago, contemplates a foundry on Park street here although date is indefinite.

MILWAUKEE—National Parking Garages Inc., 120 South LaSalle street, Chicago, advises that Starrett Building Co., 8 South Dearborn street, Chicago, will be contractor on 21-story garage with automatic lifting devices to be built here about June at 161 West Water street. (Noted Jan. 30.)

MILWAUKEE—Lippman Engineering Works, 432 Herman street, is completing work on new manufacturing plant at Forty-first avenue and Mitchell street and has closed bids for 1 five to ten-ton electric traveling crane. Other equipment will be purchased from time to time. (Noted Dec. 26.)

RACINE, WIS.—Western Printing & Lithographing Co., 1212 Mound avenue, has awarded general contract to Austin Co., 16112 Euclid avenue, Cleveland, for a 2-story plant addition costing about $100,000.

STEVENS POINT, WIS.—City, care water and light department, has placed contract for installation of an engine-driven pumping unit with the Manistee Iron Works, Manistee, Mich.

Southern States

LITTLE ROCK, ARK.—Arkansas Foundry Co., East Sixth street, plans improvements to foundry plant costing about $75,000.

GRAYSON, KY.—East Kentucky Southern railroad will erect shops and install lathes, planers, electric welder and other machine tools. W. L. Webb is general manager.

VINTON, LA.—Seigle & Tuttle building, used as a shop and garage, was damaged by fire recently.

CLEBURNE, TEX.—City commission has ordered another vote Feb. 11 for erection of municipal light plant. The same proposition, submitted to vote Nov. 1, 1929, was defeated.

TRINIDAD, TEX.—Texas Power & Light Co., John W. Carpenter president, International building, Dallas, Tex., will build a large power plant unit here including generator and boiler units.

West Central

INKOM, IDAHO—Idaho Portland Cement Co. plans a water and sewer pipe manufacturing plant to cost approximately $100,000. E. J. Simons, Pocatello, Idaho, is owner.

IOWA FALLS, IOWA—Central States Electric Co., 515 Merchants National bank building, contemplates a 1-story boiler room addition. J. M. Read is president.

FAIRMONT, MINN.—City, care G. W. Ansteth, clerk, proposes remodeling the municipal power plant. C. Foster, 512 Sellwood building, Duluth, is engineer.

JOPLIN, MO.—City, care M. E. Jones, clerk, is making preliminary plans for an airport here. S. P. Asheraft Jr. is city engineer.

MACON, MO.—City, care W. A. Tibbs, clerk, contemplates power plant alteration, although engineer has not been selected.

ELK POINT, S. DAK.—Ringsrud Mfg. Co., manufacturer of sheet metal products, advises that equipment possibly needed later will include gang punches and presses. (Noted Jan. 30.)

FLANDREAU, S. DAK.—City, care council, has under consideration plan to erect municipal power plant costing about $100,000.

Western States

FRESNO, CALIF.—San Joaquin Light & Power Corp., Power Co. building, will construct a power plant to cost $3,500,000 beginning about March 1, although site has not been selected. A. Emory Wishon is vice president and general manager.

LOS ANGELES—Liquid Carbonic Co., 3100 South Kedzie avenue, Chicago, will build a new carbonic gas plant here.

LOS ANGELES, CALIF.—Baker Oil Tools Inc., Huntington park, will build an additional plant unit to cost $10,000.

LOS ANGELES, CALIF.—James H. Knapp Co., 4920 Loma Vista avenue, designer and manufacturer of industrial furnaces and ovens, will expand plant facilities.

LOS ANGELES, CALIF.—Audio Vision Appliance Co., 1016 Sycamore street, awarded contract to Austin Co., 777 East Washington street, for a 2-story, 60 x 150-foot plant costing approximately $60,000.

MARSHFIELD, OREG.—Tower Auto Co. proposes to build a 75 x 140-foot garage and will require lathes and other machine tool equipment.

PORTLAND, OREG.—Portland Electric Power Co. plans construction of a 1-story power house on East Lincoln avenue, to cost about $125,000.

WENATCHEE, WASH. — British American Mines & Smelter Corp. will break ground soon at Wannacot lake, Okanogan county, for a reduction mill. Maj. Winfield Harper has been named resident superintendent.

Canada

EAST CALGARY, ALTA.—Canadian Gypsum & Alabastine Co. is having plans prepared for the construction of a manufacturing plant here on which the initial expenditure will be about $150,000. W. E. Armstrong, Winnipeg, Man., is western manager.

EAST SELKIRK, MAN.—Canadian Industries Ltd., Paris building, Winnipeg, Man. proposes work in the spring on an explosives manufacturing plant here to cost approximately $1,000,000.

SANDWICH, ONT.—Sandwich Foundry Co., recently damaged by fire, has awarded reconstruction contracts, but new machinery and tools will be purchased. (Noted Dec. 26.)

MONTREAL, QUE.—Montreal Automobile Ltd. machine shop and garage, 1580 Sanquinet street, was recently damaged by fire.

MONTREAL, QUE.—Canadian National Railways, care S. J. Hungerford, vice president in charge of engineering, is planning improvements to the Point St. Charles shops here with construction of new foundry and service buildings included.

MONTREAL, QUE.—Beauharnois Power Co., 1117 St. Catherin street west, awarded contract for steel pipe for dredging to Dominion Bridge Co., 1111 Beavor Hall hill, four locomotives to Canadian Locomotive Co., and 15 electric winches to William Hamilton Co., Canadian Commonwealth building. (Noted Jan. 23.)

ST. JOHN, QUE.—Crane Co. Ltd., 1170 Beaver Hall hill, Montreal, Que., manufacturer of valves, is contemplating the erection of a manufacturing plant here to cost $1,000,000.

Recent Incorporations

BELLEVILLE, ILL.—Egyptian Foundry & Mfg. Co. has been incorporated with $25,000 capital to operate a foundry by Edward A. Ruff, 500 West Main street.

CHICAGO—Portable Machinery Co. of Illinois has been incorporated to deal in machinery of all kinds with $50,000 capital by Hopkins, Starr & Hopkins, 110 South Dearborn street.

CHICAGO—Apex Bolt Products Co. has been incorporated with $10,000 capital to manufacture and distribute bolts by H. E. Siring, 2700 Logan boulevard.

CHICAGO—Architectural Metal Corp. has been incorporated with $20,000 capital to manufacture and sell metal by Charles P. Molthrup, 69 West Washington street.

CHICAGO—Douglas Ornamental Iron Works has been incorporated with $25,000 capital to carry on a general contracting business by Rosenberg, Braude & Zimmerman, 58 East Washington street.

EVANSTON, ILL.—Axel E. Johnson Construction Co. has been incorporated with $50,000 capital to engage in a general contracting business by Juul & Both, 19 South LaSalle street, Chicago.

EVANSVILLE, IND. — Rex Incinerator Co. has been incorporated to manufacture and sell incinerator equipment and appliances by Albert W. Hartig, 1032 Washington avenue, resident agent.

MICHIGAN CITY, IND. — Metal Products Corp. has been incorporated to manufacture and deal in restaurant supplies and railroad equipment with 10,000 shares of no par stock by Paul Kreuger, attorney.

WARSAW, IND.—Warsaw Foundry Co. has been incorporated with $9000 capital stock and 60 no par shares by William Petro and Carl Garber.

NEW ORLEANS — Seaboard Steel Products Corp. has been incorporated to manufacture and distribute metal products by Joseph B. Ibos, 1217 Royal street.

BOSTON—Hartwelson Steamship Co. has been incorporated with 5000 shares of no par stock to manufacture and equip steamships by Alfred A. Gillette, 236 Bay State road.

BOSTON—How-Mac Corp. has been incorporated with 100 no par shares to manufacture window pulley shields, hardware, general machinery and tools by Reginald L. Howard, 86 Brook avenue.

CAMBRIDGE, MASS.—Main Street Motor Co. has been incorporated with $50,000 preferred stock and 100 shares of common no par stock to construct automobiles, motors, machinery equipment and accessories of same by Carl F. Kussmaul, 600 Main street.

CONCORD, MASS. — Avery & Murphy Inc. has been incorporated with $10,000 capital stock to manufacture electrical apparatus and accessories and automobile parts by John W. Murphy, 83 Thoreau street.

LYNN, MASS.—Thomas H. Carritte Inc. has been incorporated with 25 no par shares to

manufacture and deal in electrical machinery by Thomas H. Carritte, 84 Collins street.

SPRINGFIELD, MASS. — Fred C. McClean Inc. has been incorporated with $30,000 to manufacture and install heating and ventilating equipment, gas and oil burners by Fred C. McClean, 108 Orange street.

WINCHESTER, MASS.—Fells Plumbing & Heating Co. Inc. has been incorporated with $12,000 capital stock to manufacture all kinds of plumbing and heating apparatus by Pierce J. Ryan, 79 Pleasant street, Stoneham, Mass.

CADILLAC, MICH.—Wexford Motor Truck Corp. has been incorporated with 50,001 no par shares to manufacture and deal in automobile trucks, engines, motors and parts, and accessories by J. C. Ford and John P. Wilcox.

DETROIT—Otwell Co. has been incorporated with $100,000 capital and 100,000 no par shares to manufacture and sell automobile parts and accessories by Ralph B. Otwell, 17005 Fullerton avenue.

DETROIT—Wolfe Bodies Inc., 6237 Woodward avenue, has been incorporated with $50,000 to manufacture and deal in truck and automobile bodies and equipment by Norman C. Wolfe, 16623 LaSalle avenue.

DETROIT—Miller Sprinkling Systems Inc., 11341 Woodward avenue, have been incorporated with $10,000 to manufacture and deal in sprinkling and water systems by Austin J. Miller, 16915 LaSalle avenue.

DETROIT — St. Paul Hydraulic Hoist Co., 1704 Dime Bank building, has been incorporated with $10,000 to manufacture and deal in hoists, dumping equipment, boilers, tanks and accessories by Glenn A. Bassett, 4795 Iroquois avenue.

DETROIT — Welding Equipment & Supply Co., 2232 Buhl building has been incorporated with 5000 no par shares to manufacture and deal in welding equipment and supplies by Harry Butler.

MUSKEGON, MICH.—Steel Lubricating Co., Grand avenue and Pennsylvania railroad, has been incorporated to manufacture and sell boilers, tanks, scows, sheet iron and steel products with $100,000 capital by William L. Eyke, 534 West Webster street.

SPRING LAKE, MICH.—Ottawa Mfg. Co. has been incorporated with $100,000 capital to manufacture and deal in iron, steel and other metals by Frank Smitton, 810 Bates street.

CAMDEN, N. J.—Interchangeable Bobbin Co. has been incorporated with 2500 shares of common stock to manufacture machinery by Edward West, attorney, 548 Federal street.

CANTON, O.—Lux-Franz Tool Co. has been incorporated with 250 shares of no par stock by Lynch, Day, Pontius & Lynch, First National Bank building.

TONKAWA, OKLA.—Williams Welding Works has been incorporated with $25,000 capital to operate an oil field welding shop by C. F. Williams.

PITTSBURGH—Dilworth Corp., has been incorporated with $5000 to manufacture iron, steel and metal products including machinery by James M. Bovard, University club, 123 University place.

SEATTLE, WASH.—Doran Co. has been incorporated with $100,000 to operate a general foundry and machine shop by Earl D. Doran, 2303 South Thirty-third street.

SEATTLE, WASH. — Pacific Brass Foundry Co. has been incorporated by John Carey, 5271 Forty-fifth street southwest, and associates.

CALGARY, ALTA.—Calgary Iron & Foundry Ltd. has been incorporated with $300,000 and 5000 no par shares to manufacture and deal in iron, brass, steel and other metals by Carlton C. Cook and William H. McLaws.

BRANTFORD, ONT.—Sleeth Machine Works Ltd. has been incorporated with $75,000 capital stock and 5000 no par shares to manufacture and deal in machinery and machine supplies, tractors and lawnmowers by Christopher Sleeth and Willoughby S. Brewster.

PORT ARTHUR, ONT.—Bottan, Beebe & Granger Ltd. has been incorporated with $40,000 capital stock to manufacture and deal in automobiles, bicycles, motors and engines by John F. Bottan and Earl F. Beebe.

TORONTO, ONT.—Marvel Head Light Ltd. has been incorporated with 300,000 no par shares to manufacture and deal in electrical machinery by George M. Willoughby, attorney, Temple building.

MONTREAL, QUE.—Skinner-Hill Co. of Canada Ltd. has been incorporated with $50,000 capital stock to manufacture and deal in brass, bronze and copper goods by S. H. R. Brush, attorney, 124 St. James.

SASKATOON, SASK.—Dominion Rotary Valve Mfg. Co. Ltd. has been incorporated with $225,000 capital stock to manufacture and deal in engines, boiler and power equipment by Samuel R. Fellows, Riverhurst, Sask.

New Trade Publications

EXCAVATORS—A bulletin by the Marion Steam Shovel Co., Marion, O., describes its line of excavators in electric, diesel-electric and gas-electric power types. Other current bulletins cover other similar shovels.

COPPER TUBING—Williams & Co. Inc., Cleveland, is distributing a folder calling attention to possibilities of flexible copper tubing and compression fittings in plumbing work. Illustrations show method of installation.

SELF-LOCKING THREAD—Dardelet threadlock Corp., New York, has published a booklet on its self-locking screw thread, illustrated by drawings to show operation of the lock.

INDUSTRIAL CONSTRUCTION—Osborn Engineering Co., designer, Cleveland, has published a booklet showing industrial plants, athletic buildings, grandstands and stadiums built from its designs.

FLUXES—Mathieson Alkali Works, 250 Park avenue, New York, has issued a folder on the development of purite and its chemical properties. Its relation to the metallurgy of cast iron also is discussed.

GRINDERS—Time-saving methods possible by grinding, on centerless and centertype installations, are described in a booklet by Cincinnati Grinders Inc., Cincinnati. Typical installations are illustrated, showing a variety of work possible, with speed and accuracy.

TRACTORS—Caterpillar tractors doing strenuous work in widely differing classes of toil, all over the world, are shown by illustrations in the occasional magazine issued by the Caterpillar Tractor Co., San Leandro, Calif.

ENGINEERING ACHIEVEMENT—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has issued a 36-page booklet on the engineering achievements of the company during 1929. It covers electrical advancement in many fields and is illustrated by halftone reproductions of operations and installations.

SCREW THREADS—Use of its device to insure close fit of threads on bolt and nut is emphasized in a leaflet by Jones & Lamson Machine Co., Springfield, Vt. Diagrams indicate the loose and clost fit, which may be detected by the measuring device without sawing the nut.

GRAY IRON CASTINGS—North Wales Machine Co. Inc., North Wales, Pa., sets forth in a leaflet its philosophy of obtaining gray iron castings when and as wanted. The purpose is to call attention to the company's facilities for handling requirements of customers.

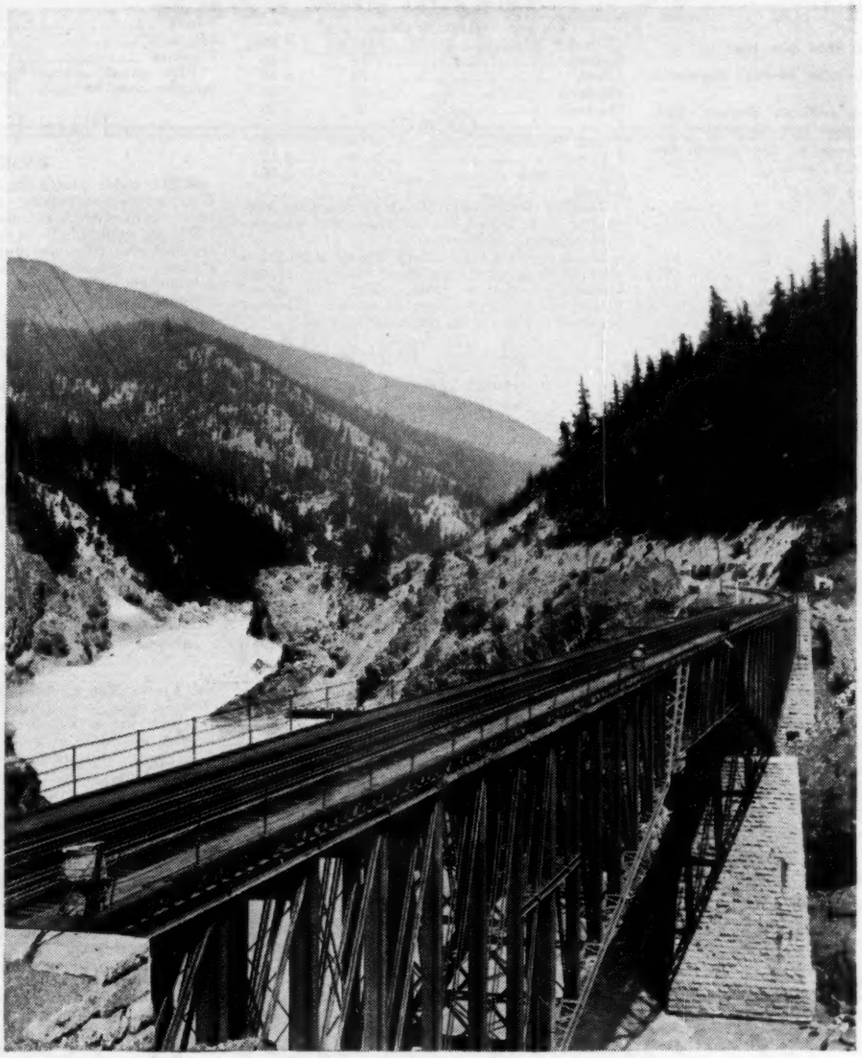
PREHEATERS—Air Preheater Corp., Wellsville, N. Y., manufacturer of the Ljungstrom air preheater, has issued a booklet describing this device for recovering heat from flue gas, preheating combustion air to increase boiler efficiency, increase steaming capacity, effect fuel savings and make more efficient the operation of industrial furnaces. The discussion relates to stack temperatures and losses, waste heat recovery, combustion conditions, fuel burning equipment, furnace refractories and their effects on performance of high-pressure and medium-pressure boilers.

LOW TEMPERATURE DISTILLATION—Salermo Ltd., London, Eng., has published a booklet on its process of distillation of industrial fuels from coal at low temperatures. Progress in the three years since the first publication of its results and aims indicates considerable gains in technique and results. Illustrations and technical data indicate what has been accomplished.

SYNCHRONOUS MOTORS—General Electric Co., Schenectady, N. Y., continuing its campaign to further the interests of synchronous motors, has issued a booklet devoted to this type of power producer. The principle of this motor is explained, with the possibilities of its application to industrial power. Illustrations show details of construction and a large number of typical installations in industrial plants. The publication covers the field of this motor completely.

EQUIPMENT—Whiting Corp., Harvey, Ill., has issued a bulletin on casting cleaning equipment. The booklet shows the layout of a cleaning room and explains advantages and details of construction of the various units. It is illustrated with halftone reproductions of the equipment and photographs of typical installations. Tables show standard dimensions of tumbling mills. Details of construction and advantages of the dust filter that the company manufactures are included.

STRUCTURAL STEEL CREATED THE SKYSCRAPER



STEEL is qualified to serve anywhere

STRUCTURAL steel is not only the strongest, safest and most thoroughly reliable of all building materials—but it is the most adaptable. It is not hindered by bulk. It allows greater freedom in design. It permits the maximum of useful floor areas.

Steel is *proved right* before it leaves the mill. It comes to the job ready to go into place. Steel bridges or buildings of any size are more quickly erected, more economically altered, extended, remodeled or removed. Use steel with thorough confidence—to save time, to bring sooner occupancy and quicker dividends. By test, by experience it is most suitable for modern construction.

A Technical Service Bureau is at the disposal of architects, engineers, owners and others who have need of any information which can be supplied through the American Institute of Steel Construction, Inc.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.

The co-operative non-profit service organization of the structural steel industry of the United States and Canada. Correspondence is invited. 200 Madison Avenue, New York City. District offices in New York, Worcester, Philadelphia, Birmingham, Cleveland, Chicago, Milwaukee, St. Louis, Topeka, Dallas and San Francisco.

The Institute publishes twelve booklets,

STEEL

INSURES STRENGTH

AND SECURITY

one on practically every type of steel structure, and provides also in one volume, "The Standard Specification for Structural Steel for Buildings," "The Standard Specification for Fireproofing Structural Steel Buildings," and "The Code of Standard Practice." Any or all of these may be had without charge, simply by addressing the Institute at any of its offices.

Pipe and Tube Prices—Plate Extras

Steel Pipe

(Base price $200 per ton)

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

To large jobbers these discounts are increased by 1 point and two supplementary discounts of 5 per cent on black, and 1½ points and two supplementary discounts of 5 per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

	Black	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	16
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ to 3¾-inch	54 off
4-inch	57 off
4½ to 6-inch	46 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. Over 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	61 off
1¼ and 1½-inch	53 off
1¾-inch	37 off
2 and 2¼-inch	32 off
2½ and 2¾-inch	40 off
3-inch	46 off
3¼ and 3½-inch	48 off
4-inch	51 off
4½, 5 and 6-inch	40 off

SEAMLESS HOT ROLLED

1¾-inch	37 off
2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ and 3½-inch	54 off
4-inch	57 off
4½, 5 and 6-inch	46 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....55 to 55 off

Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net price per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inch long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 11 pounds per square foot to but not including 7.65 pounds square foot.... .20c

Plates ordered 7.65 pounds square foot .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, class A-B..	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection ..... No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c